

Municipal Journal

Volume XLI.

NEW YORK, SEPTEMBER 21, 1916

No. 12

STEEL SHEET PILES

Several Types and Patterns Used in This Country for Trench and Other Excavation Work—Special Rolled Sections—Sheet Steel—Fabricated Piles—Dimensions, Weights and Special Advantages of Each.

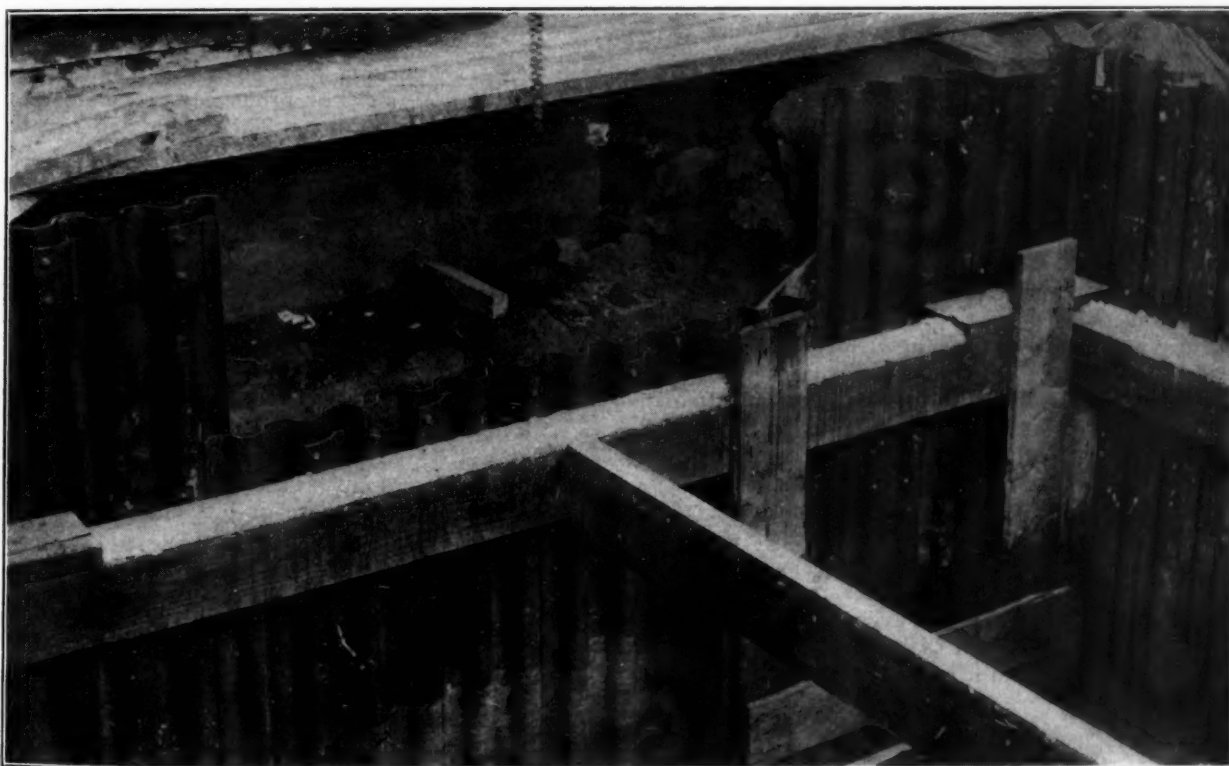
BY J. F. SPRINGER.

Although the wooden sheet pile is probably of too ancient an origin to permit its story to be written, the steel sheet pile dates back only a few years. Its first use occurred perhaps when some years ago standard rolled shapes were hastily utilized in an emergency in shaft sinking in Europe.

Some early examples were not completely interlocking. That is, the joint could be broken by horizontal pressure from certain directions. Such forms are no longer to be regarded as approved practice. The interlocking joint of any proper form of steel sheeting should provide

under favorable circumstances as many as forty or fifty times. It is evident that this greatly reduces the cost for each use.

Steel sheeting is in general very much easier to drive than wooden sheet piles, because of the thinness of the edge and body of the steel pile, together with its strength and rigidity. In fact, steel piles may frequently be put down where wooden sheeting could not be driven at all or only with extreme difficulty. Generally speaking, they can be put down wherever it is possible to drive wooden ones.



CORRUGATED STEEL PILES IN PUMP WELL OF CONEY ISLAND SEWAGE DISPOSAL PLANT.

resistance against all movements and pressure except those acting vertically.

A second property of the best forms of modern steel sheet piles is that the joints are or may readily be made approximately watertight. Complete water-tightness is necessary only now and then. Under ordinary conditions, a small leakage is permissible and is to be preferred to an expensive and difficult perfection of seal.

It is customary to pull steel sheet piles and use the same piles again and again, some having been used

There is, however, one objection to steel piles which sometimes may become very important. Wooden sheeting may often be made on the spot from cheap material. At times this advantage may decide the matter. It would apparently be desirable to meet this objection by having a quantity of steel sheeting continually on hand.

One very advantageous way to use steel sheeting in trench work and the like, especially in water-bearing soil, is to drive the piles in advance of excavation. If there is a layer of clay not far down, the piles may be driven

into it and the water cut off. The excavation of the trench will in such case be practically in the dry. If the interlock of the sheeting is such that it is fairly watertight without further attention, it may cover all necessities to leave it alone. In other cases it may be desirable to employ the particular sealing means suited to the variety of pile. This may require the driving of a wooden strip into a narrow space in the interlock or the filling of the interlocking space with clay. Or, the excavation of the upper part may proceed without piling and the sheeting may then be introduced. As to cross bracing, steel sheeting is often quite stiff and strong, so that if well driven down, the upper part will provide considerable resistance to horizontal thrusts without braces, which may be introduced as the excavation proceeds.

There are perhaps half a dozen varieties of steel sheeting in general use. They may be classified into *specialty rolled piles*, *sheet steel forms* and *fabricated sheeting*. In the first class there are three principal styles.

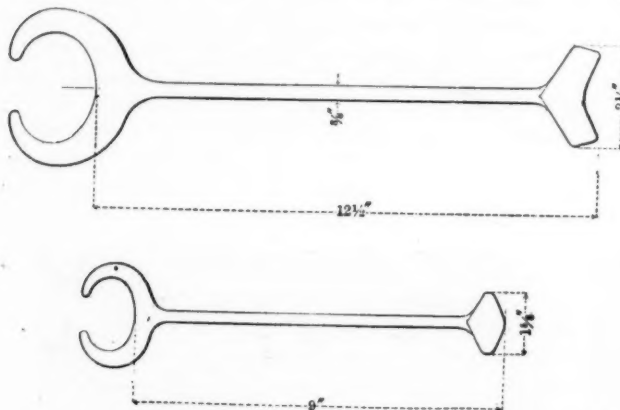


FIG. 1. EARLIEST AMERICAN ROLLED STEEL PILE.

The oldest rolled steel sheet pile in the American market is that shown in cross section in Fig. 1. The tail of one unit fits into the head of the next, and so on. In a wall of this sheeting there is but one type of unit. The tail may have the winged form shown in the two wider sizes or the blunt knob seen in the narrower width. The rated width in all these cases is estimated from the utmost tip or tips of the tail to the important point of the head opening. It is of importance to know how to estimate the effective width when the piling is assembled in a wall. This width will ordinarily be larger than the rated width because the tail will take a variety of positions in the head. The size rated at 12 1/2 inches will not be less than 12 7/8 nor greater than 13 3/8 inches when driven to position. On the average we may assume 91 unit piles in 100 lineal feet of steel wall. The form of the tail in the narrow width permits one unit to lie tight

up against another. Accordingly, it is possible with this variety to have a 9-inch pile in a 9-inch space. However, there may be a crack of 3/8 inch, when we get 9 3/8 inches for the effective width. On the average, 130 piles of the 9-inch size may be estimated as making 100 lineal feet of wall. The 12 1/2-inch size is made in two weights, differing in thickness of web and width of tail and of head opening. A 1-foot length of the heavier section weighs 43 pounds; of the lighter section, 38 pounds. One foot in length of the 9-inch pile weighs 16 pounds. One hundred feet of sheeting in place and one foot high weigh, in the respective varieties, 3,913, 3,458 and 2,080 pounds.

There are various methods of making this piling watertight. In one, wooden packing strips are placed between the back of the tail and the back of the rounded opening in the head, being driven at the same time as the forward unit pile. In the approved method of driving, the pile is placed with the tail on the forward edge, and each new pile is placed with its head over the tail of the one already in. Accordingly, when driving with the wooden packing, the head, with the packing already in it, will be suitably placed over the tail of the old pile, and both new pile and packing driven as a unit. It is not necessary that the packing shall be in a single piece. In order to facilitate handling, etc., wooden wedges may be used to hold the packing in its proper position back against the innermost side of the head opening. These few scattered wedges will be forced out or destroyed during the driving. Dry, tough wood is recommended for packing strips—wood that has the property of swelling considerably when soaked with water. Spruce is suitable. The packing may be semi-circular in section to the radius 3/4 inch, or preferably rectangular to the dimensions 1 1/4 x 5/8 inch. The packing of rectangular section is understood to produce less friction in driving because of the minimized contact. The foregoing remarks apply especially to the 12 1/2-inch forms. Shingling laths are said to be suitable for the 9-inch section. It should be understood that when these varieties of sheeting are driven with wooden packing strips, the effective width will tend to the maximum—that is, towards 13 3/8 and 9 3/8 inches. Instead of using the wooden packing, we may first drive the piling and afterwards fill in the vacant space in the interlock with dry whole wheat, dry rice, dry coal dust, etc. The object is to fill up the space as well as possible with dry material which, when wet, will swell and fully occupy it. The foregoing details have, of course, more or less application to other pile forms.

Another section of the piling has two open heads, so arranged that the section is symmetrical with respect to the transverse axis, but not with respect to the longitudinal axis. All piles are alike, but when assembled in a steel wall, alternate piles are placed in similar positions, but the intermediate ones are reversed. With this type of sheet piling, we may secure very considerable deviation in alignment from pile to pile. This may be a great convenience at times, since it permits curving the sheeting without bending the webs of the individual piles. For example, a pit lining of 15-inch piles of this type was constructed on a radius of 12 1/2 feet. The flexibility is of service also where the alignment has to be run off a little and then back in order to pass a large boulder. An angle of 20 degrees between piles

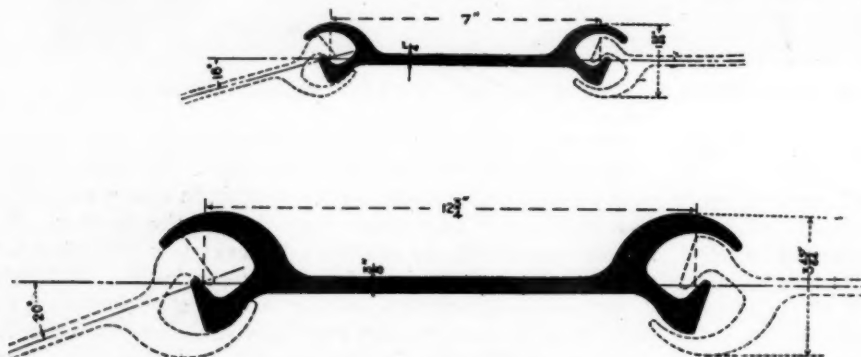


FIG. 2. LATER FORM OF INTERLOCKING ROLLED PILE.

is possible for all widths except the very smallest, where it is limited to 16 degrees; the former giving a curve with a radius less than 4 feet, the latter a curve having a radius of $2\frac{1}{4}$ feet.

It is claimed that the strength of the interlock in this piling is very considerable. Such strength may be important in trench work when we desire to use only one line of wales, when the interlock must stand considerable horizontal pressure of the earth and water. Of course plurality of lines of wales should be used where the excavation has any great depth. The stiffer the sheeting and stronger the interlock, the less longitudinal bracing will be required.

This type of piling was used at Ludington, Mich., in laying a 6-foot trunk sewer. Part of the trench was dry to a depth of 16 feet. Here three lines of wales were used. The same style of piling was employed in trench work by the Des Moines Water Company, the 7-inch pile being used here.

This sheeting, like that previously described, may be made watertight by filling the spaces in the interlock with dry material of such character that it will swell when soaked with water, such as sawdust and cinders, by which watertight joints have been made even where there was a head of 20 feet of clear water. The same style of piling was sealed in another case, against a similar head of water, by the use of oakum, driven in by means of steel rods. It became necessary, after sealing with the oakum, to drive the piling down further, which was done without impairment of the seals.

This double head section is made with effective widths of 7, 12, 14 and 15 inches. The first has a $\frac{1}{4}$ -inch web and weighs $21\frac{1}{2}$ pounds per square foot of wall, or 12.54 pounds per foot of pile. The 12-inch is made with $\frac{3}{8}$ -inch and $\frac{1}{2}$ -inch webs, the former weighing 35 and the latter 40 pounds per square foot of wall. The 14 and 15-inch have their webs bent into an arch form, which stiffens the pile. All of these are formed by rolling, with no attachments.

Another form of rolled steel sheet pile consists of I-beams, alternating with a special form which has folded-in flanges by which the bottom flanges of the I-beams are held securely together. A great advantage of this type of sheet piling is that a very large percentage of the weight of a wall consists of standard structural I-beams which are usable for all sorts of purposes. This piling, like others on the market, may be used repeatedly. It forms a very rigid wall that is practically watertight as soon as driven. On the other hand, there is little or no flexibility, so that deviation from a rectilinear alignment requires a bend of the web. The first pile should be driven with extreme care, since there is little or no opportunity to make corrections. If this first pile is accurately placed, however, there will be little difficulty with the remainder. A unit of piling, as received from the mill, consists of an I-beam with one of the intermediate pieces already in place on it. The two are driven as a single pile. Owing to its great stiffness, this piling may be used for trenches with a minimum amount of bracing. In common with other rolled shapes, the wall

made from this pile is free from rivet heads or similar projections.

All sizes of this I-beam piling are rather heavy. This limits the use to rather severe work. The thinnest web has a thickness of 0.34 inch, and the weight of this piling per square foot is 35 pounds. The sheeting is made with 12-inch and 15-inch I-beams, each unit having an effective width of 12.21 inches or 15.23, the fractional amounts being the web thickness of the intermediate piece.

Of the sheet steel type probably the simplest consists of rolled plates with a fluted or corrugated surface. A vertical strip is riveted to the pile some little distance from each edge, one on one face of the pile, the other on the other. When driven, the edges of adjacent piles overlap and are held in contact by these strips, the corrugations interlocking. This type of steel sheeting is very stiff because of the corrugations and because of the overlapping. The corrugated piling may be obtained, when desired, with the vertical strip on one edge only, giving a single interlock. It is not always necessary that the vertical strip forming the interlock shall be continu-



FIG. 4. CURVED PLATES FOR LIGHT WORK.

ous, but it may be replaced by short lengths placed at considerable intervals. This piling may be had in very light weights.

At Morgantown, Pa., where it was desired to lay a 42-inch steel pipe across an arm of a small lake, two rows of corrugated steel sheeting were carried from one bank half way across, where they were connected by a transverse wall of the piling, forming a cofferdam. This was unwatered and the soil excavated to a depth of about 8 feet, the excavated material being thrown out on either side of the cofferdam, where it sealed the latter. The steel pipe was then laid to or near the end of the cofferdam, when the sheeting was pulled up and used for the remaining half of the job. The piling used was of very light weight— $7\frac{1}{2}$ pounds per square foot. It is sometimes very desirable, as was the case on this Morgantown job, to use a pile which may be handled, driven and withdrawn by hand methods, thus dispensing with elaborate preparations for using power and machines.

In driving the corrugated piling or any other employing a vertical strip, it may often be advisable to hammer shut at the pile bottom the interlock space formed by this strip on the forward edge, to prevent as much as possible the entrance of soil into the interlock space. When the next pile is driven, the bent-in end of the vertical strip will be forced out again.

Besides the corrugated form, there are several others

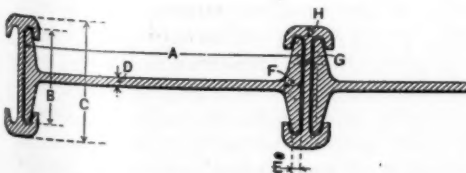


FIG. 3. I-BEAM SHEET PILING.



FIG. 5. SPRING LOCK SHEET PILES.

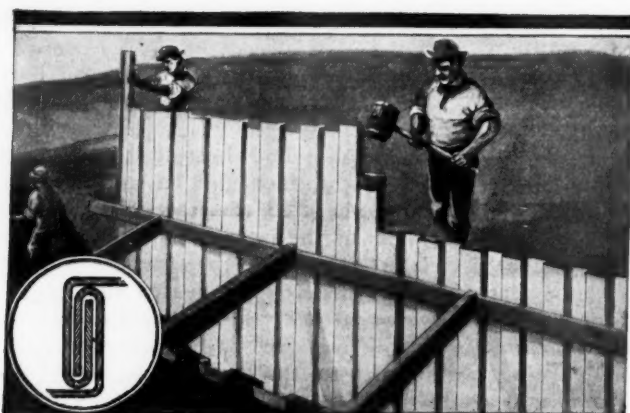


FIG. 6. SLIP JOINT SHEET PILING.

made from steel plates. In one, the pile has its lateral edges bent back to form a kind of hook. Between hooks the pile surface is bent so as to form a curved arch. When driven, the piles alternate concave and convex surfaces on the inner face of the sheeting, the bent-back edges being interlocked. The forming of this shape from plates is a cold-rolling operation. It is made in one style and size, with one effective width of 8 inches. The extreme curvature measured perpendicularly to a vertical plane totals $2\frac{3}{4}$ inches from one concave surface to the adjoining convex one. This is negligible in most cases. The thickness of this sheeting is $\frac{3}{16}$ inch, the weight per square foot of wall is $11\frac{1}{2}$ pounds, and per lineal foot of pile, 7.66 pounds.

This type of sheet piling seems well adapted to light trench work. If the horizontal pressure from the soil is considerable, the interlock will scarcely be effective.

In still another form a plain steel plate is provided with a strip riveted along each edge to form a kind of clasp. These are curved and so related in size that the smaller strip on one plate fits within that on the near edge of the adjacent plate. There are three ways of making the joint. In one, the inner strip fits closely against the outer and the edges of the flat plates simply touch each other. This joint permits easy pulling. If it is desired to make the joint tighter, the edge of the one plate is lapped with the edge of the other, the edge carrying the smaller strip being put inside the interlock. In the third form a lap is made in the reverse way. The second form is suited to a tightly-closed interlock. To increase the tightness, the open space may be filled with material which will swell (as sawdust), as described before. The reverse method of making the lap gives a loose joint, but one which has the advantage of being made from the side, if desired. Occasion for this joint would occur where head room is restricted. It is not one to be recommended generally. Variations of this "spring lock" type are made by curving the pile sheet, giving a wall with a series of broad vertical flutes, one to each unit.

Still another form made from plates consists of a flat pile, both edges of which are folded around. When the wall is assembled, alternate piles will be set back a trifle from the plane in which the others are. The joints are sufficiently involved to make them rather tight. This style is known as slip joint piling.

The cost of piling will turn largely upon the weight per square foot of wall surface, since all are made from practically equivalent materials, having a fairly definite value per pound. When ordering, it is necessary to specify not only style, but also cross-section dimensions, number of pieces and the lengths of pieces needed.

PLANNING FOR FUTURE TRAFFIC ON TRUNK HIGHWAYS

Designing Width and Strength to Meet Changing Conditions in Vehicles and in Amount of Traffic Due Largely to Advent of Motor Vehicles

By HENRY WELLES DURHAM.*

The planning of a through highway route must be considered in a somewhat different way from that of a through railway route with which it is frequently compared.

The railway engineer has the problem of locating a line to connect two terminals by the most direct route, while at the same time not neglecting intervening towns in order to gain local traffic. But, these points being settled, he has only to consider topography, both as it affects line and grade, in order to lay out his route for the most economic transportation of its loads.

The problem of the highway engineer is not so simple, while equally concerned with the provision of through and the rendering possible of the intermediate local traffic for motor vehicles, now more powerful than the original railway trains. Ordinarily, he has not the opportunity of taking a map and laying down a highway between even a considerable number of established centers of population.

What is really done when the ordinary state trunk highway is planned, is the elaboration of existing highways or the combining of a number of short routes into one long highway system.

Occasionally the opportunity is given to construct a new trunk line in undeveloped territory, but such is not the case in any well built up region in the eastern states of our country. The problem usually presented to those engaged in the laying out of trunk highways, after a general route among existing roads has been selected, is in a right choice of limiting grades, widths, and types of construction.

Just as the city planner is very seldom presented with a problem like that of the city of Washington, where a new municipality is to be created off-hand, or where, as in the case of in the city of Paris, ample authority is given for the radical revision of existing lines, but with one that usually consists in the straightening of existing thoroughfares and the improvement of details; so the State Highway Engineer in our built up states has had a plan to begin with, which contained all the routes which he could possibly want as far as lines on a map were concerned.

The first problem has been from among these to select all those best serving general state needs as opposed to local short-distance traffic, and after that was done to consider what modifications of the roads composing the selected routes were necessary to make them serve their purpose. This is the primary feature in the problem of planning for future traffic on trunk highways; in brief, the placing of such highways where it is reasonable to suppose the traffic will go. Unless the planner is endowed with the gift of second sight, or foreseeing the future, the complete solution of this problem is evidently impossible.

The second phase of the problem concerns itself with details. Obviously, the wearing surface of a road cannot be considered, even though constructed in the best manner and of the best materials, as anything more than a temporary purchase; comparable to rails for a railroad or a pair of shoes for a man; to be used until worn out and then discarded. The economic problem for the

*County Engineer of Bergen County, N. J.

future really concerns itself with the proper width, grades, and curve radii; the design of bridges and culverts, and the type of foundation adopted.

All modern State Highway departments have adopted standards giving the maximum desirable limits of grade and curvature, and it is usually attempted as well, to prescribe the minimum necessary strength for bridges and culverts, and the least width that can be accepted for a trunk highway.

The fact must be faced that while such standard limits are desirable, they can not today be adopted absolutely with the knowledge that they will be satisfactory in the distant future.

Before the advent of the motor vehicle the same relative dimension had been standard for centuries. The French and English road builders of the early 19th century had brought about the adoption of a standard type of road construction suitable for all horse drawn traffic, which could not have been satisfactorily built before the steam engine made the road roller a commercial possibility.

The present century bringing the motor propelled vehicle has compelled a revision of all former standards, but time has not yet served to define any limits beyond which these changes may not go. What makes the question most difficult is that we do not even know the limiting number of details in which changes may come. Since its advent the railroad has become gradually standardized. Its gage is fixed. The economic selection of grades and curvature is a financial problem based on the value and quantity of freight to be handled. Car clearances are standard, and the variables are introduced by the increasing weight of rolling stock necessitating increased strength of road bed. None of those questions is in any degree fixed for the highway engineer. He had for horse drawn traffic a few more or less fixed standards. His vehicle width seldom exceeded six feet. His maximum speeds were fixed, and his maximum tractive power. If his paved highway were sufficiently wide to allow the safe passage of two lines of teams it amply sufficed all purposes. For present day conditions a double track highway between important points is already too narrow. The minimum requirement is that there must be sufficient room for the passage safely at any point for two lines of rapidly moving motors.

Hence we have the present requirement in many states of a minimum paved width of from 16 to 18 feet. But our vehicles do not move on fixed tracks, nor at constant rates, so we have the added problem of the frequent necessity for the passage of vehicles going in the same direction at different rates of speed, requiring as a minimum width the equivalent of a three track railway. With the present sizes of motor vehicles this means that a twenty foot roadway is none too wide. It is the writer's belief that 30 feet of paved way is the least that can be safely planned as adequate for a trunk highway during the next fifty years. There seem to be no present tendencies toward increasing the width of passenger vehicles, but there has been a great increase in that of motor trucks, and their rapid increase in numbers points toward a very extensive use of highways in the future for traffic that now is handled by the railroads as short haul freight. If the planning of highways is to include proper financial arrangements for their maintenance it is certainly reasonable to include in such plans the provision that this freight traffic shall in some way pay its share of the cost of the highway in whose destruction it is the principal element. That this will be done may be assumed here. The difficulty is to predict just what will be the ultimate limiting width of these vehicles, and to what extent they will be run in trains consisting of

several trailers behind a tractor. Were this condition to exist on a track it would involve no additional question about width, but as the trailers do not necessarily follow accurately in the track of their leader, and as on turns they cut corners, considerable use on our highways of this type of traction involves an additional allowance of width over what is necessary for single vehicles. All that can be done at present is to make ample estimates for the width of such vehicles as they are building today, and to count on some increase being needed in the future. An allowance of ten feet for each line of traffic would seem to be ample.

It may be taken for granted in the beginning that the existing traffic on any proposed route is of no value as a guide to the future. The route must first be selected; then the fact assumed that the improvement of this route will in itself make traffic, and the possibilities of the growth of such traffic investigated as far as can be done with the available knowledge of existing conditions.

No trunk highway should be planned without sufficient width of right of way to allow of its eventual absorption as a city street. Such a development is possible at any point, and it should, therefore, even if not improved to this width at first, be so designed as to render feasible its eventual paving for a width on either side from curb to property line.

Having provided the right of way of the best available grade and curvature, and such width as it is reasonably certain will be adequate for all developments that can be foreseen, there remains the important problem of road bed or foundation. We are not concerned here with the question of wearing surface, which is a study in itself; but whatever type is selected can not give satisfaction unless it rests on some relatively unyielding surface. It must also be recognized that, even as regards foundation, the term "permanent" can not be used absolutely. No foundation can be constructed that will not settle in some degree unless resting on rock, and this is a condition that is seldom encountered in highway work. Such a term is often applied to concrete masonry bridges as distinct from those of steel, but the distinction is only relative. A concrete, like a steel bridge, must be designed for some given load (unless it is built regardless of expense), and this definitely limits its maximum capacity. If the weight of wheel loads increases in the future as it has in the past, many of our concrete bridges will be as inadequate as our older steel ones are today. It is frequently said that such a condition must be overcome by the limitation of maximum loads, and this can be done for a time, but if it should eventually become more important to allow the highways to be used by some vastly heavier vehicles it will have to be done, and the highways again reconstructed just as they have been in the past for the vehicles of today, and just as all railroads are being reconstructed today for engine loadings that were not conceived of twenty-five years ago. It may be said at once that it is not possible to do what is often suggested, viz.: lay a permanent foundation that will never have to be replaced, and on which successive wearing surface can be laid. A foundation can be constructed that will outwear several wearing surfaces, but any foundation is subject to some settlement, and it can only be said that it should have a longer life than the surface.

For a trunk highway it seems to the writer most essential under ordinary conditions that it should be provided with a concrete foundation of at least six inches in thickness. Local conditions will dictate whether the first wearing surface shall consist simply of a smooth finish to this concrete, of a bituminous coating, of a layer of bituminous concrete in one of its various forms, or

of one of the many types of rectangular blocks. Such a foundation should out-last two wearing surfaces, and be adequate with some building up as the basis for a third. It is impossible to expect a thin slab, such as even the heaviest paving foundation really is, to withstand all tendencies to settle and crack after years of use; but it will resist such tendencies better than any other type of construction, and, considering the time it will last, it is the only economical method to employ. If the money now being thrown into the various classes of near-foundations were concentrated in half the area of roads with concrete bases, and each community were satisfied with a few roads well-built, instead of trying to smear large areas with a thin bituminous or light block construction without foundation, there would be less concentration of traffic and less wear on the relatively few trunk highways, and we would soon begin to have roads that would not be considered marvels when they out-last a five year period.

TOWN PLANNING IN DONCASTER

English Plan for Compelling Neighboring Communities to Combine in Preparing a General Plan for the District Which Embraces Them

In a paper before the Institute of Municipal and County Engineers of England, Percy Morris, of the surveyors department of the Doncaster Rural District Council, described plans which were being prepared for the laying out and development of Doncaster and the land within a 10-mile radius thereof. The general idea was to give permission to the local authorities interested to prepare a scheme, and to have the local government board make compulsory the preparation of suitable town planning schemes to cover the whole of the area. He considered that it would be necessary to prepare about a dozen different plans for as many separate areas, each by the different authorities concerned, but that the "general principles governing and guiding the growth of a large and rapidly developing district could be better adjusted under the direct supervision and control of a central authority or a tribunal composed of representatives from each local authority, not merely as a conference, but directly undertaking the larger questions such as main arterial roads, circumferential roads, relations between road and railway communications, general questions of sewerage and of drainage, its future extension, and the vexed question relating to character and elevation of buildings."

Mr. Morris believes that not only the arrangement of roads and streets, but also the height and character of the buildings, should be covered by such general plan. But the more pressing necessity is for the preparation of what he aptly terms a traffic plan, that is, a plan of the thoroughfares required for handling the traffic of the district. It is chiefly to provide for the co-ordinating of these traffic routes and the insuring of the effective arrangement of them throughout the entire area that the providing of a central authority seems most essential. These general routes having been decided upon by such central authority, the allocation of certain areas for definite purposes, the provision of open spaces, the limitation to the number of houses per acre, and the general planning of the minor streets can safely be left to the individual towns embraced within the area.

One section within the Doncaster district comprising a total area of 4,560 acres (about 7 square miles) and which at present holds a population of about 460, will, it is expected, within a few years contain the families of 3,000 to 4,000 employees of a colliery which is about to be

opened, and it is hoped to insure the proper developing of this area by some such means as that suggested. "It is to prevent the haphazard location of buildings by the speculative builder, to prevent the overcrowding of houses, to arrange the lay-out of the area upon economical and convenient lines, to secure from the beginning the proper sanitary conditions, to preserve the pleasant amenities of the district and of each separate estate, to obtain absolute control of all building developments, that the council seek to promote a town planning scheme for this area."

The principal highway between this area and Doncaster it is proposed to make a 60-foot road with a set-back on each side of 20 feet to the building line. This thoroughfare would, for the present at least, have a 32-ft. roadway in the center, at each side of this a 7 foot parking strip with shade trees, a 7 foot path, and a 20 foot set-back to the building line. For the narrower main roads it is suggested to use in some cases a 24-foot roadway with an 8-foot path on each side and a 15-foot set-back to the building line. In other cases the roadway would be only 18 feet wide, on each side of which would be a 5-foot parking strip, a 6-foot path, and a 20-foot set-back.

In general the following principles are recommended for minor streets: For streets not exceeding 300 feet in length and not, in the opinion of the council, likely to be required for the purpose of through traffic, the street may be made not less than 20 feet wide. If such street does not exceed 500 feet in length, the minimum width may be 22 feet; while if it exceeds 500 feet in length but is comparatively short, 24 feet may be used as a minimum; the width in each case including the roadway, path on each side and planting strip, if any. On 20 foot streets the roadway must be at least 14 feet wide and at least one turning space be provided with an area of not less than 500 square feet and a width of not less than 24 feet. Such turning places shall be spaced at intervals not exceeding 300 feet. Trees, grass or shrubs shall be planted, or a suitable footway shall be constructed, in the space, if any, between the roadway and the boundary of the street. On the 22-foot streets the roadway should be at least 16 feet wide, with a foot way on one side which is not less than 4 feet wide. Turning spaces and parking strips to be provided as in the previous cases.

It will be noticed that the widths here provided are much narrower than would be considered for most American communities, and yet the considerations already discussed by Municipal Journal in the articles on "Practical Street Construction" would indicate that they would suffice for the homes of working men which probably would not exceed three stories in height; it being remembered that in each case a set-back of 15 or 20 feet is provided from the side of the road proper to the building line, thus providing 50 feet as the minimum distance between buildings.

COMMISSION-MANAGER PLAN IN DAYTON.

The citizens of Dayton, O., or a large percentage of them at least, believe that the commission-manager plan of city government has proved a great success, and as a matter of pride probably, but also with a desire to help other cities, is endeavoring to make widely known their opinion that efficient service is best secured through this form of government. The Bureau of Research is distributing free of charge copies of the annual report in which the activities of every department are graphically set forth. In addition to this, one of the commissioners, J. N. Switzer, is giving illustrated lectures in various cities, including thus far Philadelphia, Pittsburgh, Norfolk, Toledo, Aberdeen, S. D., and others, where he has addressed chambers

of commerce, commercial clubs and similar civic organizations; receiving only his traveling and hotel expenses, his time being given for the good of the cause.

Dayton is the largest commission-manager city, and one of the best governed in the country, we judge from results. Even if it be claimed that it is the man and not the plan that counts most, only by this plan could the city have gone outside of its citizenship to obtain the man it wanted and got.

EVOLUTION OF THE CATCH BASIN

In Newark, N. J.—Decrease in Size and Cost and Improvement in Appearance and Effectiveness— Cast Iron, Stone and Concrete Heads

By EDWARD S. RANKIN.*

One of the most important of the appurtenances to all combined and storm water sewers is the catch basin or inlet for conveying the surface water from the streets to the sewers. There are innumerable styles of basins, and it may be of interest to describe a few of those which have been used in the city of Newark and to note the gradual tendency toward smaller and less conspicuous heads or surface construction.

They may all be divided into two general classes—those in which the manhole opening for cleaning purposes is on the sidewalk, and those in which it is in the gutter.

The first basins constructed in Newark at the beginning of its sewer system, in 1854 (some of which are still in use), were huge affairs, some of them being 6 ft. by 4 ft. in size, built square, and about 8 feet in depth. Approximately this depth has been adhered to ever since, but the present standard size and shape is circular, 4 feet in diameter. These basins were of the first type mentioned above. The head was formed of four pieces of granite laid on top of the brick work and held together with iron clamps, with two granite wings forming the curb on each side of the opening for water. The rectangular opening formed by the four granite slabs was covered with two or three cast iron plates. The sill in front of the opening over which the water ran was another

*Engineer, Department of Sewers and Drainage, Newark, N. J.

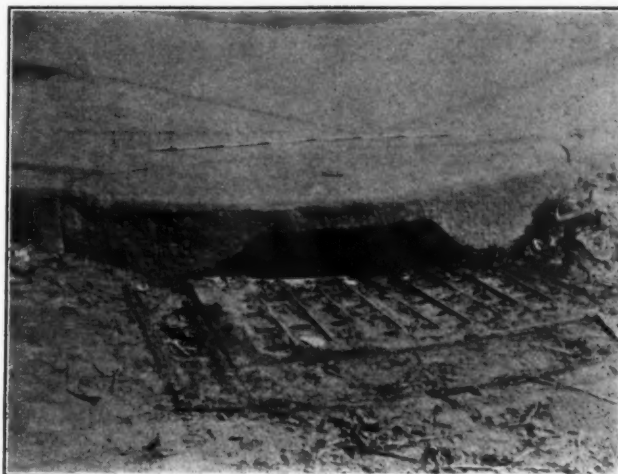


FIG. 2. SECOND FORM OF CATCH BASIN.

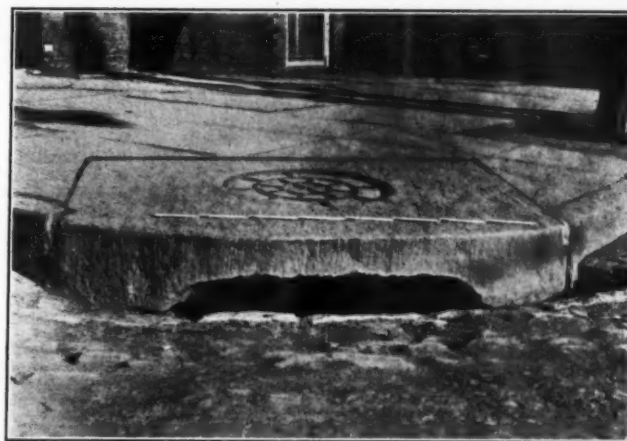


FIG. 3. SOLID GRANITE HEAD.

granite slab. These seven pieces may be readily distinguished in the photograph (Fig. 1).

This form of head was used up to about 1871, when the second type of basin was introduced (Fig. 2). The four pieces of granite, but much reduced in size, were moved into the gutter, and the plates covering the opening were perforated and served both for access to the basin and for

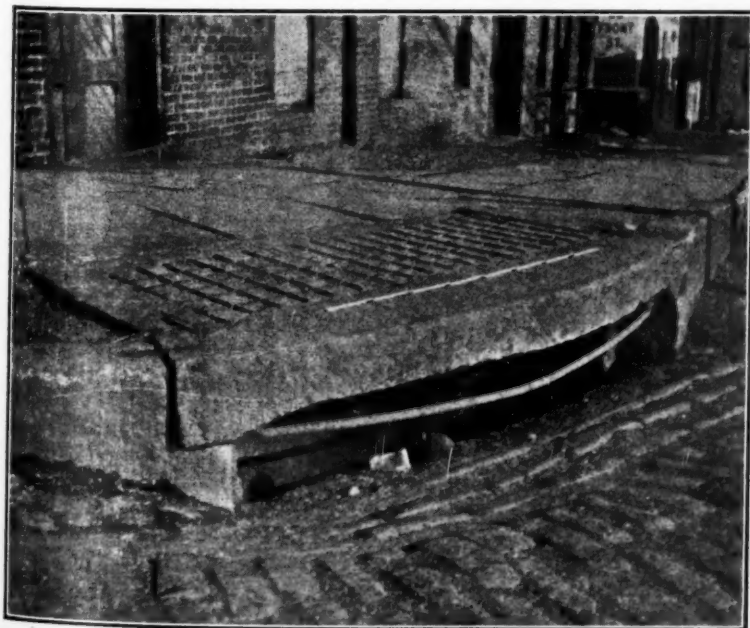


FIG. 1. EARLIEST FORM OF CATCH BASIN.

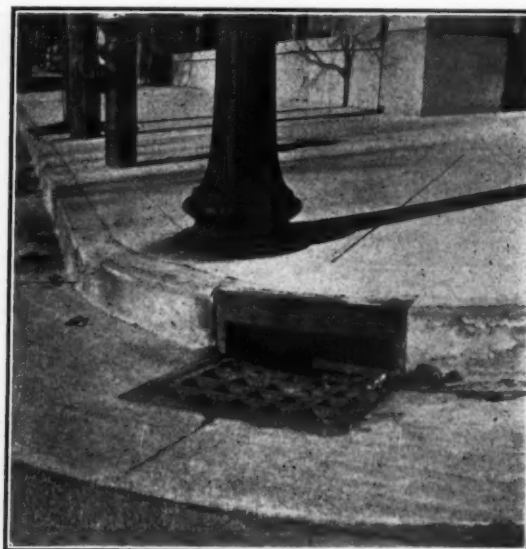


FIG. 4. CAST IRON INLET FRAME.

An effort has been made to so reproduce all the photographs as to show them at the same scale, and so compare sizes.



FIG. 6. TRIANGULAR CAST-IRON TOP.

admitting the water. The wing pieces were dispensed with. The chief objection to both of these styles was that the granite slabs were liable to get out of place through the action of frost, and the iron plates were frequently dropped into the basin. Of the two, the second form was less unsightly, but more liable to need readjusting.

The next change was a return to the first type, but instead of four pieces, the head was made of one large piece of granite about 4 ft. by 5 ft. in size, with a circular manhole opening (Fig. 3). This form of head was used almost exclusively up to 1910. In that year, owing to the excessive cost of the granite heads, the writer began to substitute a concrete head of the same shape and size. The appearance was somewhat improved and the cost more than cut in half.

In the same year the cast iron head came into general use, the basins reverting again to the second type above mentioned, with the perforated plate in the gutter acting for both water and manhole openings (Fig. 4). Being much smaller than the concrete or granite heads, these basins present a neater appearance, but they are more difficult to clean and the openings, especially in the Fall of the year, are apt to become stopped with leaves.

The latest style of basin, adopted last year, is a radical departure from all the other forms, but comes again under the first type. The basin is built entirely under the sidewalk, in which is set a cast iron manhole cover, and the water is conducted to it by a chute from an opening cut in the curb (Fig. 5). With this construction the basin

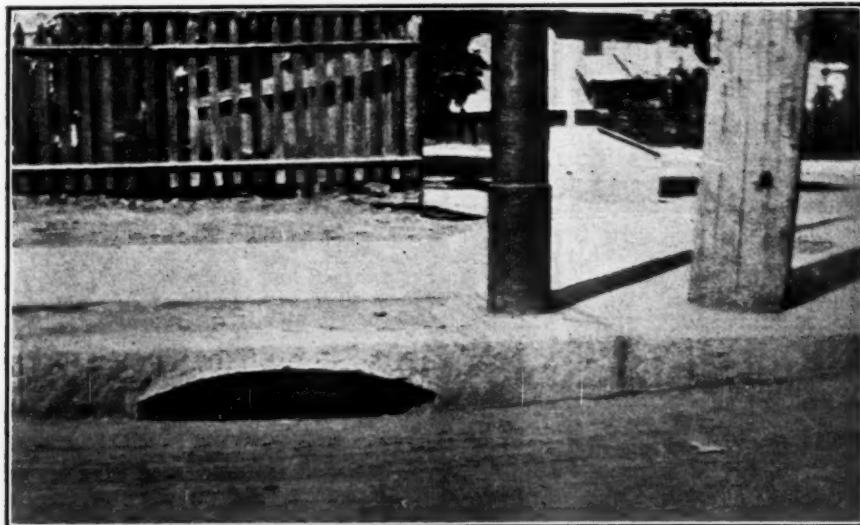


FIG. 5. LATEST FORM OF CATCH BASIN.
Inlet in the foreground. Manhole cover in sidewalk partly concealed behind wooden telegraph pole.

may be placed at any convenient point within reasonable distance of the opening, instead of being built at a fixed point in order to conform with the curb. Its appearance is much neater, only the curb opening and the circular plate of the manhole head being visible. A third advantage is that the opening is not placed at the corner, but back of the cross walk on one or both sides of the corner, according to the grades of the intersecting streets, avoiding a deep gutter at the cross-walks.

Several other forms of basins have been used from time to time. One of these, a triangular cast iron head, is shown in Fig. 6; it was never adopted to any extent.

TRACING ON HEAVY PAPER.

In connection with the drawing of a map of the city of New York, which was completed last year, a method was employed for tracing onto a heavy "Selectra" drawing paper from the sectional maps upon which the original plotting was done. Drawing tables with tops 4 ft. 6 in. by 3 ft. 6 in. had cut out from the top a rectangular opening 46 by 34 in., and over this was set a ground glass 47 by 35 in., flush with the top of the board. The sides and bottom of the table were boxed in and three 100-watt Mazda lamps placed in the box. With this powerful illumination under the copy, it is possible to trace through two thicknesses of heavy paper as readily as in the ordinary use of tracing cloth.

In connection with the selection of materials on which to make the drawings, the department made some determinations of the changes in length of tracing cloth and drawing paper due to varying humidity of the atmosphere. During two months tracing cloth varied .06 of an inch per foot. Tests of the drawing paper used showed a variation between extremes of .029 of an inch per foot of length. The map of the city was about 23 feet long, and this meant a change in length of about two-thirds of an inch.

MUNICIPAL CONTROL OF PUBLIC UTILITIES IN AUSTRALIA.

All public services in Victoria, Australia, are in the hands of the government or the municipal councils, the Melbourne Tramway Co. having just reached the end of a 30 years' lease of the central metropolitan roads. The company has enjoyed an income which latterly exceeded \$3,649,800 a year, its last dividend amounted to \$934,300 and it has paid various bonuses ranging from 3 to 20 per cent. Its system of cable cars, now out of date, radiates from the center of the city to all the suburbs. The lease is falling into the hands of a public trust, which will carry it on as at present until the war is over and then adopt electric traction. Linking the outer suburbs is a ring of municipally owned electric trams and these will be joined with the central cable tracks, the whole to be controlled by the public trust.

In other directions municipal control is being strengthened. With a population of 650,000, Melbourne is divided under the control of 24 councils; but the central city council is now proceeding to absorb the inner suburbs piecemeal. Controlling the greater part of the tram lines, and having its own electric plant, the central body has the power of large expenditure on municipal services.

Municipal Journal

Published Weekly at
50 Union Square (Fourth Ave. and 17th St.), New York
by
Municipal Journal and Engineer, Inc.

S. W. HUME, President
J. T. MORRIS, Treas. and Mgr. A. PRESCOTT FOLWELL, Secretary
A. PRESCOTT FOLWELL, Editor

Telephone, 2805 Stuyvesant, New York
Western Office, Monadnock Block, Chicago

Subscription Rates.

United States and possessions, Mexico and Cuba.....\$3.00 per year
All other countries 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at
New York, N. Y., under the Act of Congress of March 3, 1879.

Change of Address.

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributed Articles.

Contributions suitable for this paper, either in the form of special articles or as letters discussing municipal matters, are invited and paid for.

Information Bureau.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL'S Information Bureau, which has unusual facilities for furnishing the same, and will do so gladly and without charge.

STORM WATER INLET INTERVALS.

Those who notice details of street structures and apertures in traveling from city to city must have been impressed with the very great difference in sizes of the inlet openings provided for admitting surface water to sewers. An example of this difference may be found illustrated on page 353 of this issue, where are shown two kinds of inlets employed by the same city. There should generally be a considerable difference in size if this is to be adjusted to the amount of water entering the sewer, since this amount will necessarily vary under different conditions. We question, however, whether difference in size is wholly or even largely determined by such scientific considerations, but imagine that in the majority of cities a standard size is adopted which is used in all localities.

There are objections to the very large openings found in a number of cities, one of these being the possibility that large sticks or other matters may be washed into the inlet from the street, and even children have been known to fall through such large openings. Such inlets also detract from the appearance of the street; and if they are scientifically designed and the amount of water which reaches them requires that size opening, there must be a seriously objectionable volume of water flowing in the street on the way to such inlets. In other words, these large openings are objectionable as such, whether or not they are necessary to accommodate the run off; and if they are necessary, the volume of run-off itself is objectionable also.

Provision should of course be made to remove a calculated volume of water from the street, but it does not necessarily follow that this must be removed by certain fixed openings, such as one on each street corner. It has been proposed that the entire curb be made in the form of a grating with the storm sewer beneath it, permitting the water from the street to leave the pavement at every point and thus practically eliminating all flow

in the gutter. This is going to the other extreme, and yet there is considerable to be said in favor of this plan. But without going to this length, it certainly is possible to increase the number of points at which the gutter water may be withdrawn to the sewer. With an increased number of such openings the amount of water to be withdrawn at any one point will of course decrease and thus the size of opening may be diminished. Similarly the volume of water flowing in the gutters will be diminished, being in general inversely as the number of inlets. This increase in the number of inlets would of course increase the cost, but since the size can be reduced, the increased cost would not be in direct proportion to the number of inlets. If the number in ordinary practice were doubled by placing an inlet in the center of each block, and all inlet openings were reduced to half the present size, the cost might be increased by approximately 50 per cent, or say \$35 to \$50 per block, or 5 to 15 cents per foot of street. This does not seem a very high price to pay for improved service and appearance, and decreased inconvenience of gutter flow.

There are localities and conditions in most municipalities where there are additional reasons for increasing the number of inlets. In a very flat country where it is difficult to carry a desirable gutter grade continuously from one corner to the other, double the grade could be obtained without changing the other conditions by doubling the number of surface water inlets. On very steep grades, and especially on gravel, macadam and other pavements which are subject to erosion by heavy gutter flow, such erosion increases with the volume and velocity of flow (the velocity itself increasing with the volume), and consequently by employing more inlets the destruction of the gutter and the adjacent pavement may be reduced. Not only this, but on steep hills it is difficult to intercept large volumes of water by curb openings, or even by gutter openings which are not more or less objectionable and possibly dangerous to traffic.

These advantages and others would seem to warrant serious consideration by city engineers whether or not it is advisable to limit the location of sewer inlets to street intersections only.

ANTICIPATING TRAFFIC IN ROAD DESIGNING.

In designing a sewer system for house sewage, the engineer assumes that the capacity should be sufficient for a certain period, say 50 years, to come and estimates as scientifically as possible the amount of sewage which may be anticipated from the district served by the end of such period, and designs the size of the sewer accordingly. The same is true of the distribution pipe line for a water supply system, and a number of other public utility structures. Scientific planning of highways, either city or country, would seem to involve similar conditions. That is, the engineer should decide for how distant a period it seems desirable, for financial or other reasons, to adapt the proposed construction, and should estimate the maximum traffic which the roadway will be called upon to carry during or at the end of such period, and adapt his construction to such traffic. In this case the traffic may vary not only in quantity, but also in character.

This idea is set forth quite clearly by Mr. Durham on page 351 of this issue. As he states, the problem is by no means a simple one for several reasons. One is that the volume of traffic may increase not merely at the same rate as on other roads in the same district, but the improvement of this road will probably draw to it some of the traffic now carried by other more or less parallel roads; how much will depend to a considerable extent on the nature of the paving and maintenance thereof

on these parallel roads, which may not be under his control or possible to foresee. In addition to this, there is also the uncertainty as to what changes will be made in the character of vehicles which will use the road, which changes may be in both width and weight; and even in length, since it is possible that the next few years may see trains of tractors and trailers using the road, which trains will require much flatter curves or else wider roadway at such curves than would suffice for single automobiles.

In spite of these difficulties, there certainly could be and should be more attention paid by road engineers to the considerations discussed in the article referred to, and in planning any road appreciation should be had of the fact that it will not ordinarily suffice to construct a roadway for the purpose of caring for only the present amount and kind of traffic. Numerous instances can be cited where this policy, although saving in first cost of construction, has proved to have been a very short-sighted one, the new road having been practically ruined within a year or two by the fact that the traffic using it quickly developed to one much heavier than that for which it had been designed.

STREET PLANNING IN RIVERSIDE.

Riverside, Cal., was laid out in 1871 as a town one mile square, divided into 169 square blocks, each block having an area of $2\frac{1}{2}$ acres. The two center streets in each direction are 99 feet wide, the remaining streets are 66 feet wide. This gives 34 per cent of the total area in streets. Since then alleys have been run through more than one third of the blocks, thus reducing the area of the blocks appreciably below the remaining 66 per cent of total area.

The original idea was that each of these blocks, except a few set apart as business blocks, school grounds, a park, etc., should constitute a single property containing one residence and the orange grove of the owner. This idea was followed out for a short time, but not adhered to for long, and there are now no blocks left that are used exclusively for raising oranges and containing one residence.

The city engineer, A. P. Campbell, to whom we are indebted for his information, writes us: "The lack of alleys in the original lay-out has been a considerable drawback in planning sewers and public utilities. Each owner has followed his own idea in location and width of alley, much to the general inconvenience of the city. The width of alleys varies from 10 to 30 feet. The 10-foot alley is almost useless, the 30-foot one is too large for alley purposes. We find 15 feet a desirable width. The lack of alley design in the original layout of Riverside has cost many dollars in duplication of sewer lines. Some blocks have as many as three sewer lines." The map shows alleys running some in one direction and some in the other, while nearly half the blocks have no alleys at all; and in no case does a continuous alley run through more than four blocks.

Several divisions of the streets have been used, but the final one adopted is as follows: On the 66-foot street 34 feet is used for roadway, with two 16-foot sidewalk spaces. The sidewalk spaces in the residence sections are divided into 6 feet for sidewalk pavement and 10 for tree space, although of the 6 feet the owner is required to build only the outer 5 feet. In the business section, about 23 blocks, the roadway is made 40 feet wide between curbs, with 7-foot parking space and 6-foot sidewalk. (Originally this latter was the provision for the entire city, but the 7 feet proved too narrow for a tree space.) The 99-foot streets were laid out with 12-foot sidewalk spaces and 75-foot roadways, but in 1896 the

sidewalk spaces were widened to 18 feet, leaving a 63-foot roadway. The latter gives ample sidewalk room, and also space for two car tracks, 11 feet centers, in the roadway.

Originally the curb intersections were rounded to a 5-foot radius. This was later changed to 8 feet, then to 13 feet; and Mr. Campbell is using a 25-foot radius in one recent reconstruction.

In the business section two catch-basins are placed at each corner, one beyond each crossing, the crossings being raised to the elevation of the sidewalk. The storm sewers are laid under the gutters.

Since the original square mile was laid out, additions have been made totaling more than this area. Experiences had with these additions have resulted in Mr. Campbell recommending 60-foot streets for residence purposes, divided into 30 feet for roadway, 10 for parking spaces and 5 for sidewalks. For 100-foot boulevards, 18 feet is recommended for sidewalk and tree space and 64 for roadway. The popular width of a residence lot is 50 feet, depth 150 feet, and a 15-foot alley in the rear, giving a block 315 feet wide between street lines.

RELAYING GRANITE BLOCK PAVEMENT IN PORTLAND.

Several streets were improved in Portland, Me., during 1915 by taking up the old granite blocks, splitting them and relaying on a 5-inch concrete base. The work has been very satisfactory and more is contemplated. On about eleven thousand square yards of this type of pavement laid by the Hassam Paving Co. on a cost plus 10 per cent basis, detailed costs are:

	Per Sq. Yd.
Taking up old blocks, splitting, counting, etc.	\$0.5188
Excavation	0.1991
5-in. concrete base	0.4896
Sand	0.0849
Block paving, laying, hauling and pea stone	0.2201
Grouting blocks	0.1703
Watchmen	0.0310
Engineering and inspection	0.0194
Overhead	0.1539
Total cost per yard	\$1.8871
	.1887

Cost plus 10 per cent.....\$2.0758

The blocks were laid on a 2-inch sand cushion and grouted with cement and pea stone. The average size of the block when laid was 4 inches wide, 5 inches deep and $6\frac{1}{2}$ inches long and 34 or 35 were required per square yard. An average day's work in splitting per man was 548 blocks. A barrel of cement was required to grout 19 square yards, and a yard of sand was sufficient for 61.30 yards, and a ton of pea stone for 73.20 cubic yards. Sand was furnished by the city without cost, but an allowance of 10 per cent was made on an estimated cost of \$1 per cubic yard.

MOTOR FIRE APPARATUS IN WINTER.

Writing early in this year, in connection with his annual report, Frank L. Stetson, chief of the Seattle Fire Department said:

"Statistics have from time to time been prepared to show the great saving in cost of maintenance and increased efficiency of motor apparatus over horse-drawn, but it remained for the unfavorable weather conditions of snow and ice of the past few weeks to emphasize the greater efficiency of this apparatus on slippery and snow-covered streets and hills. On more than one occasion when horse-drawn apparatus could get but a few blocks from the stations, and in one instance but a few feet from the station doors, the motor apparatus was able to overcome the difficulty of the snow and slippery streets and proceed to the fires."

The WEEK'S NEWS

The Federal Highway Aid—Road Bond Litigation in St. Louis—Hudson River Pollution—Rates in Municipal Water Plants—City vs. Company in Los Angeles, Brooklyn and San Francisco—Fires in Decatur, Ga., and Boston, Mass.—New Auto Apparatus in Service—Equalizing Taxes in New York—Saving Toledo—City Collection for Newark—More Garbage Litigation—Six-Cent Fare Case Decision—Wire Tapping Before the Law—Richmond, Cal., Harbor Improvements.

No Federal Aid for States Without Highway Departments.

Washington, D. C.—Each state must organize a highway department before the Department of Agriculture can co-operate with it in the distribution of funds provided for by the federal good roads act. A ruling to this effect has just been given by the Department of Agriculture in the case of Indiana, where there is no highway department. The ruling was sought by Senator Taggart of that state.

Bridge Patents Held Invalid.

Topeka, Kans.—City and state officials in Kansas are greatly interested in an Ohio decision in which the United States District Court held invalid more Luten reinforced concrete bridge patents. Daniel B. Luten brought suit in Ohio to stop the infringement of his patents on reinforced concrete bridge construction. Judge Sater held the Luten patents were similar to methods used earlier in Austria. Kansas is engaged in a similar case in the federal court against Luten, who brought suit against Newton for the use of his patents. The state has been fighting the case for the city.

Renew Fight on \$3,000,000 Road Bonds.

St. Louis, Mo.—Suit for an injunction to prevent the issuance of the first \$520,000 of the \$3,000,000 bond issue for St. Louis County roads has been filed in the United States District Court. The members of the county court are named as defendants. The petition sets forth that there are eleven incorporated towns in the county, and it holds that, under the law as interpreted by the state Supreme Court, money raised by a county bond issue cannot lawfully be spent on highway improvement within incorporated towns. As the residents of the towns are taxed for the interest on the county bonds, it is held that provisions of the United States constitution forbidding confiscation and assuring the equal protection of the law to all would be violated by the issuance of the bonds. It is stated in the petition that a "deputy attorney general" rendered an opinion that the proceeds of a county bond issue could

legally be spent on town highways. Many voters in the towns, it is stated, voted for the bond issue last February in the belief that this was true. But since that time, the petition states, the Supreme Court has held otherwise.

Regular Bridge Inspection.

Johnstown, Pa.—Following the completion of permanent repairs to four important bridges, for which a contract has been let to the Farris Engineering Company, of Pittsburgh, the city will inaugurate a regular system of bridge inspection, according to an announcement by Mayor Franke. Minor repairs to other bridges will also be made from time to time, and care taken that the structures are not permitted to deteriorate. The permanent repairs that have been contracted for will lengthen the lives of the Franklin street, Poplar street, Cambria street and Coopersdale bridges for from eight to fifteen years. The Coopersdale bridge, at the end of five or six years, will have to be replaced. At Walnut street and First street, new bridges must go up. The present structures are so far gone that repairing them will do no good. The regular system of bridge inspection will probably be carried on through the city engineer's department. An inspection was made this summer by the city's own men, and the structures reported in bad shape. This resulted in the bringing of experts here to make an examination, which has been followed by actual repairs. The recommendation of the Farris Engineering Company, which made Johnstown's bridge inspection, is that all bridges be repainted once every two years.

New Bridge Opened.

Elizabeth, N. J.—With the exception of the approaches leading to it the new bridge over the Elizabeth River at Baltic street has been completed. It was erected by the county at a cost of \$39,305.85. As the bridge now stands, it can be used only by pedestrians. The approaches will be built by the city and it is expected that this work will be completed before the cold season. The structure is a Strauss trunnion bascule bridge patented by the Strauss Bascule Bridge Company, of Chicago, Ill. The first lift bridge of the Strauss type built here was erected by the county in South First street about nine years ago. This was one of the first highway bridges of this type erected in the east, and since it was built many others have been erected in New Jersey and other eastern states. This bridge type has been found easy of operation and can be maintained at a low cost. The foundation of the new bridge is of concrete and goes down twelve feet below low water mark. Under the foundation of the two main piers on which the bridge rests, 150 piles, each thirty feet in length, were driven. There are two other piers which form re-



Courtesy, Elizabeth (N. J.) Journal.

NEW STRAUSS BASCULE BRIDGE AT ELIZABETH.

taining walls for the filling of the roadway. County engineer Bauer has pointed out that the county maintains but one bridge tender at each of its movable bridges, while railroads have from five to seven. He expressed the belief, however, that the time will soon come when two men will have to be employed by the county. The Strauss type of bridge has been found so satisfactory that already a contract has been placed with the corporation to make plans for the proposed new structure over the Elizabeth River in South Front street. The Baltic street structure was built by the F. R. Long-W. G. Broadhurst Company, of Hackensack.

SEWERAGE AND SANITATION

United States Prohibits Hudson River Pollution.

White Plains, N. Y.—Deputy United States marshal James S. Meng has served a notice from Secretary of War Newton D. Baker on chairman Charles D. Millard and members of the Westchester County Board of Supervisors and manager John J. Brown of the Bronx Valley Trunk Sewer Commission, to the effect that the United States Government would bring suit to force the removal of the sewerage outlets in the Hudson River at Yonkers unless the county built a disposal plant. The Secretary of War set forth that in 1912, when the government brought a suit against the Bronx Valley Sewer Commissioners, the action was dismissed upon the signing of a stipulation that the commission would purify the sewage before it reached the Hudson River. It is believed the government action will cost the county thousands of dollars. Action was taken by the Secretary of War at the instance of the Merchants' Association of New York. The association has a case in court to compel the Passaic Valley Sewer Commissioners to purify the New Jersey sewage before discharging it into New York Harbor. Hearings in this case are scheduled for October.

Will Not Enter Joint Sewerage Project.

Wilkes-Barre, Pa.—Wilkes-Barre will reject the offer of Hanover Township and Ashley Borough to unite in the erection of a new sewer and disposal plant in Hanover Township at a cost of \$400,000. For several days the city has had Alexander Potter, consulting engineer of New York City, here making surveys and estimates. His findings are that the city can save money and more efficiently handle the sewage disposal problem by acting for itself. Dr. Samuel Dixon, state commissioner of health, recommended a sewage disposal plant in Hanover township to be built by this city, Ashley and Hanover together. Conferences were at once held and the matter has since been under consideration. Clyde Potts, consulting engineer, of New York, is in charge of the Hanover work.

Eliminating Mosquitoes in Jamaica Bay Marshes.

New York, N. Y.—The progress of the drainage work on the Jamaica Bay marshes to rid Brooklyn and Queens of the salt marsh mosquitoes was shown on a tour of inspection arranged by health commissioner Haven Emerson for a party of health officials, civic workers and newspaper men. The commissioner personally conducted the expedition. Among those in the party were H. I. Eaton, chief inspector of the Atlantic County, N. J., mosquito extermination commission, whose power-driven ditching machines are being used in the Jamaica Bay ditching operation; R. W. Gies, chief inspector of the Union County mosquito extermination committee, who has also been a member of the Interstate Committee; Joseph Lonergan, supervising sanitary inspector of the department of health; Eugene Winship, sanitary engineer of the department of health; and representatives of many communities in the region. The work under way involves the drainage of about 8,000 acres of salt marshes bordering Jamaica Bay and is being done under a contract awarded in April to R. M. Brown and C. R. Simpson, whose bid was \$60,788. The contract calls for the completion of the work in 150 working days. Work on the present contract began on May 18 and to date, in seventy working days, 1,790,000 linear feet of ditches have been

cut daily. It is estimated that the ditching of the entire area to be drained will entail the cutting of over 4,000,000 linear feet of ditches. Each ditch is 10 inches wide and 2 feet deep. The city has appropriated \$150,000 for the work, and after deducting \$60,000 from this, there will be a sufficient amount left to drain meadows bordering on Flushing Bay and the Gutman Swamp, between Jamaica and Flushing. This work will be started next year.

Paralysis Epidemic Nearly Ended.

New York, N. Y.—The number of new cases of poliomyelitis continues to decrease daily, having dropped as low as 15. The death rate is, however, higher. The total number of cases to date is 8,798 and the deaths number 2,197. The average number of new cases reported each day last week was 36.28, while the average of the week before that was 50.28, a clear drop of fourteen. The decrease is noticeable throughout the state. A protest has been made by parents' associations against September 25 as the date for opening school, but the health department insists it would be safe. Reports from the health department contain a table giving some idea of the communicability of the disease. This table shows that out of the first 7,000 cases reported in 6,748 different families, 6,521 families reported one case each; 205 families two cases each; twenty families three cases each; one family four cases, and one family five cases.

A new theory of transmission has been presented—that the disease is carried by fleas on rats. Evidence has been given for and against and the theory has gone no further than the numerous previous ones. The health department and other investigators have been making many experiments along this idea.

WATER SUPPLY

City Plant Increases Rates.

Toledo, O.—An ordinance increasing the water rates has been passed at the request of safety director Goodwillie, who explained that the waterworks department is running behind \$100,000 a year and that unless the rate is increased no more mains can be laid for new customers. Ordinances providing for the metering of all water and the charges for fire taps also were passed. The ordinance provides for an increase of \$1 a year on the minimum rate for metered water, which now is \$5.40 a year. There also is a graduated increase for large consumers which will net the city approximately \$70,000 a year. Director Goodwillie stated there are 34,000 customers in the water department who pay annually \$400,000 for water. The new minimum monthly household charge will be 55 cents beginning Nov. 1. There are about 800 large consumers who pay their bills monthly. They will pay the new rate for the first time on Dec. 1.

The new schedule charges 8 cents per 100 cubic feet for the first 1,500 cubic feet used daily by the large consumers; 7 cents per 100 for the next 8,500 cubic feet used daily; 6 cents for next 10,000 cubic feet; 5 cents for the next 20,000 cubic feet, and 4 cents per 100 for all over 40,000 cubic feet used daily. Special provision is made for private dwellings not furnished with inside plumbing but supplied with water from yard hydrants. The charge in these cases is \$6 a year. Water used for lawn sprinkling from outside hydrants in connection with dwellings securing water on flat rates will be charged as follows: Lawns under 1,000 square feet, \$1.50 a year; lawns from 1,000 to 2,000 square feet, \$3 a year; lawns from 2,000 to 3,000 square feet, \$4.50 a year and lawns over 3,000 square feet will not be furnished water on flat rates.

City Plant Wants Lower Rates.

Janesville, Wis.—Urgently recommending that the city commission discontinue the present schedule of rates for water service and place into effect a schedule which will aggregate a saving of \$7,000 to city water consumers, the board of public works has asked for even a greater reduction than announced some time ago. The decision of the board will be submitted to the Wisconsin railroad commission for approval. Only meter rates are effected. The plan of the board of public works is to continue for at least a year before a decision is reached as to the city's purchasing and installation of meters. It is beyond question that ultimately the city will buy all meters. The min-

imum water rate is now ten dollars. Under the reduction the charge will be but seven dollars, this for meters connected with $\frac{5}{8}$ -inch pipes. The $\frac{3}{4}$ -inch meter owner pays eight dollars for service. The recommendation of the board further urged that the city be charged \$15,000 instead of \$7,000 for fire protection, this charge to cover the use of mains and hydrants up to and including the terminal hydrant and connection of mains existing at the present time. The first annual statement of the water company under city operation, between July 1, 1915, and July 1 1916, shows a total revenue of \$51,026.49. The total operating expenses were \$18,402.55, making a net operating revenue of \$32,623.94. The operating revenue charge included charges for depreciation amounting to \$4,496.52 and in addition tax charges on the plant for \$2,699.94. Out of the \$32,623.94, the net operating revenue, interest of \$14,149.81 on the \$186,000 bond issue made by the city, and in addition interest on the additional \$80,000 municipal bonds that the city had to buy, was paid. This leaves an absolute net income of \$18,508.40 to the credit of the city for the municipal operation of the water plant during twelve months. The net income was disposed of by appropriating \$4,581.95 to the construction of mains and a new building at the pumping station, and by leaving the remaining \$13,926.45 to surplus. The first three months' operation of the plant by the city, April, May and June of 1915, added \$4,739.77, making the net surplus \$18,666.22 for the fifteen months the city controlled the system. Under the new rates the utility is allowed \$14,000 for operating expenses, \$3,270.64 for the sinking fund to retire the bonds, \$6,000 for depreciation, \$4,600 for taxes, \$15,000 interest and \$178.27 per year for a period of ten years to cover acquisition expense, making a total of \$43,048.91 to be available to cover all expense under the new rates.

Report on Possible Water Supply.

Canton, N. Y.—Charles E. Perry, consulting engineer of Albany, has reported to the water board on the investigations he and Leslie R. Smith, water works superintendent, have conducted in the Beech Plains district in the town of Pierrepont. The report covers five springs as a possible source of supply for Canton, which he is confident can be utilized in a gravity system. These springs, he stated, have their rise in sand hills and flow into Little river, and the minimum flow, as shown by the weir measurements, is 592,000 gallons in twenty-four hours. The measurements were made during the months of July and August. Mr. Perry is certain that the flow of 592,000 gallons is ample, because the average daily pumpage here for this year has been 310,000 gallons. As an additional supply, the dry weather flow of Little river could be utilized, so that the total flow of over 1,000,000 gallons a day could be drawn. Cost data will soon be prepared.

Water Conservation for Cuyahoga Valley.

Columbus, O.—An immense water conservation plan for Cuyahoga, Summit, Portage and Geauga counties has been prepared by state superintendent of public works Frank Fauver and will be recommended to Governor Frank B. Willis and the next legislature in superintendent Fauver's annual report. The plan contemplates a big artificial lake lying at the intersection of the four counties, covering about seven square miles, with water from two to fifty feet deep. The lake would be situated three miles south of Chagrin Falls, running south over six miles from that point, and being located midway between Twinsburg and Aurora. The purpose of the plan is to gather and insure an adequate supply of water for manufacturing plants in the upper Cuyahoga valley. Surveys have been made showing a large water shed to drain into the lake. Twelve farm houses are in the area to be submerged and hundreds of acres of trees. The tracks of the Wheeling & Lake Erie for half a mile are in the submerged area and would have to be moved to the higher level. Only one public road would have to be abandoned. One of the main roads would be rebuilt across the submerged area. The State plans to use the canals as distributors for the water to be sold. Recognizing the end of the canal as a means of transportation, superintendent Fauver has evolved the plan of holding the

sections needed to distribute water for sale and developing them to the utmost. For years the state has been working on the sale of water from the Ohio canal from Akron to Cleveland. As the use at Akron depletes the water in the river there will be less for the state to divert at Brecksville, and the present canal supply may be endangered. For these reasons the state has been declining to make new or enlarged water contracts to its customers in the Cuyahoga valley for the past year. By completing the new artificial lake the state would have an almost unlimited supply of water in reserve, so that it could use from the spillway into Tinkers creek enough to fill out what Akron has taken away from the canal and be able to make new and larger contracts. Superintendent Fauver has decided, since the recent survey of the canal system, that its reconstruction for transportation is impossible and would be unwarranted.

Compromise in Water Rate Case.

Huntington, W. Va.—A compromise in the city water rate fight which has been vigorously waged for more than four years has been effected by representatives of the city and the Huntington Water Company. A cut in fire hydrant rental and sweeping reductions in the metered water charges for the consumer, as well as a relaxation of restrictions that have hampered the city's efforts for more adequate fire protection, are embodied in the agreement, which provides also for dismissal of all except one phase of the case now pending before the state public service commission. The terms of the compromise are as follows:

1. City fire hydrant rental reduced from \$40 to \$30 per hydrant per annum.
2. Addition of each fire hydrant shall entitle city to laying of 750 feet of 6-inch pipe, irrespective of locality.
3. Beginning October 1, minimum meter charge is reduced from \$3.00 to \$2.25 per quarter, entitling consumer to 11,250 gallons.
4. Maximum rate per 1,000 gallons reduced from 25 cents to 20 cents.
5. In no event is minimum charge by meter to exceed eighty per cent of that rate charge.
6. Park Hills district case isolated and referred to public service commission for settlement.
7. Compromise contingent upon filing by water company of revised rate schedule, embodying above terms and its acceptance, which is probable, by the state public service board.

STREET LIGHTING AND POWER

Company Value, \$21,890,066—Commission, \$6,328,000.

Los Angeles, Cal.—The state railroad commission has fixed a valuation of \$6,328,000 on the electric distributing system of the Southern California Edison Company in Los Angeles, in connection with its intended purchase by the city of Los Angeles. The company contended the property, plus severance damages, was worth \$21,890,066, while the municipality set up on it a value of \$3,473,803, with \$414,035 severance damages. Commissioner Edgerton wrote a contrary opinion valuing the plant at \$4,705,000. The majority opinion fixed the actual value of the system at \$4,750,000, allowing in addition severance damages of \$1,578,000. The decision has been awaited with great interest throughout the country, as it involved important precedents on the question of severance damages. The company's system would have to be cut in two by the taking over by the city, a part being outside the city and not useful to it. The major opinion was signed by Commissioners Thelen, Devlin, Loveland and Gordon. Commissioner Edgerton dissented on the principle enunciated by the other members on severance. Edgerton, in a vigorous minority opinion, says that the major opinion is, in fact, permitting net earnings to be capitalized. The major opinion declares that it desires to make it perfectly clear that the severance award was not reached by capitalization of net earnings. It is a full and just compensation for the value of property not to be taken measured, not by capitalization, but by adding, year by year, the reasonable losses until the period of recovery. The decision says: "More is involved in this proceeding than a determination of the issue between the city of Los Angeles and the Edison Company. California is a young and growing state. We shall require millions of additional capital for the development of public utility enterprises. If the investor is assured that

he will continue to receive fair treatment in California he will continue to invest generously in our public utility properties, for he will know that on such condemnation he will receive compensation which in law and in fact is a 'just compensation.' Commissioner Edgerton says that "a proposition whereby the future profits of a public service corporation are looked upon as 'property' to be capitalized, so that the amount in a lump sum can be taken from the people and paid in advance to the present-day owner of the property, is so entirely out of line with present-day tendencies that it cannot succeed. The people will not pay for such fictitious and arbitrary values." Although the decision is considered a great victory for the city, yet the company officials appear to be very well satisfied with the result. In spite of the low valuation, it is pointed out that existing conditions apparently make it impossible for the municipality to take over the company's holdings at that figure. The people voted a \$6,500,000 power bond issue and of this sum \$5,525,000 was set aside for the acquiring of a distributing system. But, according to M. F. Betkouski, president of the city council, only \$4,800,000 is now available for that purpose. Accordingly Betkouski favors the paralleling by the city of the company's lines, and this work may be started soon. Plans are being considered for a conference within a short time of municipal officials and officers of the Edison company, at which both sides will make every effort to work the problem out in harmony and along lines that will be fair to both city and company.

Flood-lighting Niagara.

Niagara Falls, N. Y.—The new flood-lighting system installed to illuminate the falls is very successful and the spectacle is attracting a great deal of attention. An experimental flood lighting installation had been in operation for some weeks before and its success led the Niagara Falls Citizens' Committee to undertake the permanent illumination. An appropriation of \$25,000 was made by the city for illuminating the rapids and the cataract. One hundred lamps, arranged in five batteries, form the Western-Davis system used—a total of 50,000,000 candle power. It is thought that the Niagara Falls, Ont., officials will follow the example of the United States side and flood-light the Horseshoe and Canadian falls.

Street Lighting Experiment.

Lexington, Ky.—Following a conference between mayor J. C. Rogers and vice-president F. W. Bacon, of the Lexington Utilities Company, which recently purchased the twenty-year electric lighting and power franchise, it was decided to set up sample street lights, leave them up for two or three weeks, so that the city officials and citizens generally may see them in operation, and then decide. The plan was outlined by Dr. Milo R. Maltbie, of New York, one of the experts recently employed by the Philadelphia Utilities Bureau in working out the franchise for the city. Ten to fifteen lamps will be installed by the company without cost, a few to be placed side by side with the present arc lights and to give approximately 25 per cent more illumination than the present lights. At least three types of experimental installations are to be set up, differing in the candle power of the lamps. A report will be made on each light and installation.

\$28,000,000 Involved in Rate Penalties.

New York, N. Y.—The Brooklyn Borough Gas Company, through its attorneys, has challenged district attorney Harry E. Lewis to test the constitutionality of the recent 80-cent gas act by bringing suit against the company to collect the \$1,000 penalty provided in the law for every case in which the company has charged more than 80 cents per 1,000 cubic feet for gas. That there is \$28,000,000 now due the state in penalties if the law is constitutional, was one of the assertions made. The company has flatly asserted that it will not reduce its rate in Coney Island from 95 to 80 cents, as the law directs, and there has been a violation of the law for every one of the bills sent out to the company's 12,000 customers since July 1, 1916, when the law went into effect. Attorneys for the company insist that the law is unconstitutional and confiscatory. The corporation was most anxious for the state officials to begin

suit for penalties to test the alleged constitutionality of the law. The company is still charging its consumers the old rate of 95 cents. District attorney Lewis has apparently accepted the challenge of the company, having filed an affidavit in the Manhattan Supreme Court, after being served with the complaint, in which he, the Public Service Commission, the City of New York and Attorney General E. E. Woodbury are named as defendants, asking for a change of venue. Figuring on the future earnings of the corporation and the value, the complaint sets up that on December 31, 1916, the value of the plant will be \$1,602,102.81, which if the "going value" should be added, should be \$1,802,102.81. For the past year, allowing 14½ cents for amortization less repair, the net income amounted to \$101,972.98. "Had the rate for gas for 1915 been 80 cents instead of 95 cents, the net income would have been \$48,154.03," the complaint avers, this making a return at the 95-cent rate of but 6.48 per cent and at 80 cents it would have been 3.06 per cent, and if the "going value" had been included in the capital the return would have been 5.74 at 95 cents and 2.71 at 80 cents. The Brooklyn Borough Gas Company put accountants on their books and show that for the first five months of the present year and on an estimate of the earnings for seven months, the 95 cent rate resulted in earnings of \$99,442.22, a return of 6.2 per cent. At 80 cents the returns would have been \$36,664.18, a return of 2.28 per cent. It is asserted that the value of the assets now is \$2,200,000.

Companies Do Not Like City's Conduit.

Erie, Pa.—Three experts engaged by the Erie County Electric Company, J. D. O'Brien, assistant superintendent of underground construction, Detroit Edison Company; Spaulding Sellers, general superintendent, and H. B. Alverson, underground engineer, both of the Buffalo General Electric Company, have reported that the city-built conduits would be inadequate and undesirable for housing the cables of the Erie County Electric Company and the Erie Lighting Company. They say that the design is not suited for the purposes of the utilities without extensive and costly alterations. The use of one conduit by two companies they predict would lead to trouble in emergencies. Finance director Baker stated at the discussion in council following the report: "In 1913 the city of Erie entered into a contract for construction of the conduit. The councils acted in good faith, but the conduit was not built until 1914, when the contract was carried out. On two occasions representatives of the electric companies have said the conduits were all right but that they must have other transformer vaults." The city officials finally decided to ask for the services of an underground system engineer of one of the larger cities to examine the Erie conduit and to submit an "unbiased" report.

San Francisco Gas Case Resumed

San Francisco, Cal.—Charles L. Barrett, secretary of the San Francisco Gas and Electric Company, has testified before Railroad Commissioners Thelan and Devlin upon the resumption of the hearing of the gas rate case which the city has brought against the Pacific Gas and Electric Company. The present investigation was begun several months ago. The city wants a lower rate than the present 85-cent one. Barrett gave a detailed history of the use of gas in the city and the development of the Pacific company. An important witness was E. C. Jones, a valuation engineer. He declared there was no unnecessary duplication of mains in the city that is included in his valuation. Wherever there has occurred a real duplication, he has eliminated the cost from his appraisal. He showed where he had eliminated a total of \$541,829 worth of property which was non-usable, of which \$313,252 was for mains. All estimated costs were averaged over the years, he said, and no abnormal prices paid for materials were included in the appraisal. Much of the plant was put in at exorbitant cost, he said, because extensions are always demanded and made when times are prosperous and costs are high. When asked by Commissioner Devlin how high the price of oil would have to go to make it profitable for the company to return to the use of coal for manufacturing gas, Jones replied that the company had switched to oil when oil was \$3 a barrel. He said that methods of manufacture had changed

so that it would be almost impossible to say for the present. Coal was unprofitable here because there was no use for the by-product, coke. Expert W. C. Vincent, testifying for the company, gave the reproduction cost of the company's physical properties at \$15,718,181. The city's engineers had found this cost to be \$13,594,765.

FIRE AND POLICE

Chief Caught in Fire He Set.

Long Beach, Cal.—An exhibition sham battle against the flames in a burning three-story structure, staged here to raise funds with which to rear a monument to the memory of former fire chief Joseph E. Shewsbury, who was killed while on duty a few months ago, came near resulting in the death of the present fire chief, Clarence Craw. Chief Craw is suffering severely from burns which he received when, with his clothing ablaze, he managed to fight his way to safety through the flames which he himself had spread. The accident was witnessed by 3,000 persons attending the firemen's tournament.

Fire Destroys County Courthouse.

Decatur, Ga.—The DeKalb county courthouse has been totally destroyed by fire and a number of important documents lost, including papers relating to alleged irregularities in recent elections. It is thought by many that the fire was of incendiary origin. The Decatur volunteer department reached the scene first and then the Atlanta firemen answered the call, but their efforts were vain and the building was completely gutted. Governor Harris has offered a reward of \$500 for the arrest of the perpetrators of the crime if the fire was set. A new building may be started very soon.

Two Platoon System Adopted.

Eveleth, Minn.—The city commissioners have adopted, without a dissenting vote, the double platoon system for firemen. It will be effective Jan. 1.

City Police for Traffic Safety.

Berkeley, Cal.—A number of prominent citizens have already notified chief of police Vollmer volunteering to become members of the "Citizen Police" force which is being formed to assist the regular officers in the enforcement of the local traffic laws. The movement, which was inaugurated at the suggestion of mayor S. C. Irving, is primarily for the purpose of stopping the reckless drivers who have made the streets of the city dangerous to children. The mayor feels that if responsible citizens, particularly those owning automobiles, will volunteer to report all cases that come within their observation of infractions of traffic ordinances and violations of the rules of the road as laid down in the state law, it will be of great service in decreasing such offenses. It is proposed to give the citizen police authority to make arrests by swearing them in as special police officers, without pay.

Summer Resort Swept by Fire.

Boston, Mass.—Paragon Park, a popular Nantasket summer resort is partly destroyed as the result of an early morning fire which swept through its pleasure buildings doing \$50,000 damages. The big Palm Garden, the principal building of the park, had been saved, but the dance hall, the old mill, the moving picture theatre, the entrance, the sand bumps and a portion of the roller coaster, as well as other buildings were destroyed. Several firemen were injured, but none seriously. The fire starting in the sand bumps about 1 o'clock, from unknown cause, swept eastward, toward the other structures. Fanned by a heavy wind, the flames were carried across the park, destroying the power station, and many telephone and telegraph poles were also destroyed. A huge water curtain thrown in front of the Palm Garden saved it from destruction, while firemen from Hull, Cohasset, Hingham, Scituate, Quincy and other near-by towns checked the flames after they had seriously threatened to destroy the Nantasket hotel, the pier of the Nantasket Steamboat Company, 100 or more cottages in the residential section of Rockland Hill and other buildings. At 2.30 o'clock the fire was under con-

trol. While the fire was in progress, thousands of persons arrived in automobiles and other conveyances to watch the spectacle. Chief Frank F. Reynolds, of the Hull police, fire chief John Mitchell of Hull, and chief Charles Bickford of the Metropolitan park police will conduct a probe. As an indirect result of the fire, a lineman employed by the Weymouth Light & Power Company, was probably fatally injured when he was thrown from the company truck when it skidded. Wheeler and other members of a repair crew were responding to a hurry call from the park to repair a live wire which had fallen from a burned pole.

MOTOR VEHICLES

New Police Car in Service.

Dallas, Texas—A new patrol wagon has been put in service by the police department. The new wagon, which is smaller than the old one, will be used to answer all calls, but the old one will be retained for emergency cases. The new car has a carrying capacity of five passengers.

New Truck in Parade.

Danbury, Conn.—A parade of the city's fire apparatus welcomed the new Seagrave motor hook and ladder truck to the city. The new machine had been on exhibition at the recent Providence convention. The truck was built at a contract price of \$6,125. It has a six-cylinder motor producing a rated h. p. of 79.3. The motor is equipped with double type ignition, Bosch magneto and Willard storage battery. It has a Westinghouse electric starter. The wheels are wood of artillery type. The wheelbase is 245 inches. The tires are solid, Firestones, with quick detachable rims. The truck is equipped with a ten-inch revolving searchlight and two ten-inch rigid headlights on the dash, and a tail light; all electric. The frame, body and running gear are painted vermilion. Altogether the truck is equipped with 227 feet of ladders, as follows: One 56-foot trussed extension ladder; one 45-foot trussed extension; one 30-foot wall ladder; two 25-foot wall ladders; two 20-foot wall ladders; one 16-foot inside extension ladder; one 16-foot roof ladder with folding hooks; one 12-foot and one 10-foot roof ladders, and one 10-foot folding ladder. The truck made good in strenuous tests and was accepted.

New Truck Purchased.

Marysville, Cal.—The city council has purchased from the American La France Company a combination triple "type forty" chemical engine for the sum of \$6,000. Three hundred feet of one and one-half inch hose, together with the necessary couplings and nozzle, were also purchased. The same company recently sold the city a \$9,000 engine.

GOVERNMENT AND FINANCE

Equalizing Taxes in New York State.

New York, N. Y.—Controller Prendergast has filed with the State board of equalization the results of an examination made by the bureau of municipal investigation and statistics of the finance department to determine the average rates at which real property is assessed in nine large counties of the State outside of New York City. The counties were Albany, Erie, Monroe, Niagara, Oneida, Onondaga, Rensselaer, Schenectady and Westchester, which in 1915 contained together more than 55 per cent of the assessed valuation of real property outside of New York City. The examination was made to get reliable data for the guidance of the board of equalization, which will meet soon to adopt the 1916 county equalization table, on the basis of which the direct State tax is apportioned. The examination the controller said, showed that the rates at which real property was assessed for 1915 in the nine counties range from an average rate of 48 per cent in Niagara county to 75 per cent in Rensselaer county, and that, compared with the ratios fixed by the State board of equalization last September for those nine counties, the real property in those counties was assessed from 6 to 24 points lower than the ratios fixed by the board. With the results of the examina-

tion in the hands of each member of the board of equalization, Controller Prendergast hopes that when the board meets to adopt the 1916 equalization table it will be in a better position than ever before to fix accurately the ratios of the several counties of the State, and that when the direct State tax is apportioned New York City will not have to pay more than its fair share.

New Accounting System for San Francisco.

San Francisco, Cal.—A complete and uniform accounting system, as required by the city and county of San Francisco, will cost not less than \$200,000. These figures were given to the members of the finance committee of the board of supervisors at a conference of that body with representatives of the Klink-Bean Company and of Herrick & Herrick, certified accounting firms. The supervisors set aside in the budget for the present fiscal year \$10,000, to begin the work of installing a uniform system of accounting, and it was thought this sum would go a long way toward completing the work. The experts say the sum they name is a very inadequate one for the system that will be required for a city like San Francisco, and say it will take probably five years before it can be made to operate smoothly.

Economy, Bond Election and Loan for Toledo.

Toledo, O.—Cooperation between the city officials and local bankers has resulted in the formulation of definite plans for getting the city out of its financial difficulties. All have agreed that a bond issue of \$850,000 be submitted again to a vote of the people, probably at the November election; that, in the meantime, the Toledo banks lend the city such part of \$375,000 as the city may need for operating expenses; and that the Federal Reserve bank at Cleveland be asked to defer the collecting of the \$650,000 of the existing floating indebtedness, due that bank on notes Sept. 28 and Oct. 1, until proceeds from the proposed bond issue are available to pay the notes. The offer of a temporary loan by the clearing house committee of bankers followed investigation of the borrowing limit of the city, which disclosed that the city has the legal right to pledge the general revenue tax of the December collection which will amount to about \$375,000. Meanwhile, in order to be able, with a clear conscience, to ask the people to approve the bond issue, the council is to immediately institute a vigorous policy of economy which will involve wholesale reductions in salaries, removals of minor officials and the abolition of divisions. Politicians are beginning to discuss what the city actually needs. It is probable that the department of public safety will be abolished and the divisions of police, fire, public inspection and weights and measures rearranged under other departments.

STREET CLEANING AND REFUSE DISPOSAL

Newark Collects Its Garbage.

Newark, N. J.—Following years of inefficient garbage collection with innumerable complaints and attempts of the last contractor, Hugh F. Gilligan, to raise the sum of the contract, the city has finally taken over collection itself, after the scavenger had given up. Gilligan wanted \$91,650 for his equipment, but the city refused to buy. The contractor places his losses at \$113,000 since he took the contract at the beginning of the year. Deputy Chief Engineer James C. Hallock of the board of works is in charge and with complete equipment has been able to make excellent collections. Ninety wagons and 105 men started the work. Vehicles of all kinds have been hired and one auto truck has been put into service. A number of wagons of the correct type will probably be borrowed from the New York City street cleaning department. The men, who were taken over from the contractor, are doing better work, getting through with their routes hours earlier than before.

Meanwhile discussion of the proposed municipal incinerating plants, to be operated in connection with electric light plants, is getting more definite. In 1912 a report had been prepared by Deputy Chief Engineer Hallock and

Frederick O. Runyon, consulting engineer, and this will be used as a basis of plans. The report assumes "that one pound of mixed refuse has one-eighth of the heat value of one pound of coal, and if, as shown, the average daily production of refuse in Newark was 800 tons, its fuel value when burned in destructor power plants of the type considered was equivalent to that of 100 tons of coal. Whatever energy 100 tons of coal per day will generate it is also possible to generate as a by-product of the destruction of 800 tons of mixed refuse per day." Four plants in different locations, each for the collection and distribution of the electrical energy produced, Mr. Runyon states, were estimated for a total capacity of 1,000 tons of refuse per day—two plants for 200 tons each and two plants for 300 tons each, and the increase in daily tonnage from year to year was estimated at 40 tons. The cost of the four electric plants adjoining the destructor plants, including the underground and overhead distribution system, was estimated in the 1912 report at \$775,750. Mr. Runyon estimated the cost under the present abnormal market conditions would be approximately 25 per cent additional, or \$969,688, increasing the annual fixed charges of operation by \$21,332.50, or from \$90,332.50 to \$111,665. Since 1912, Mr. Runyon further said, there has been developed in this country an engine long built abroad and suitable for installation in plants of this character, having an efficiency 20 per cent greater than that figured in the 1912 report. This would make it possible, he contended, to produce 20 per cent more energy than originally estimated, and making the same assumptions then made as to the percentage of power sold, would raise the annual income of the plant from this source by \$20,422, or to \$122,532. The increase in the number of street lights since 1912, he said, would also contribute to greater economy in plant operation. Chief Engineer Morris R. Sherrerd stated that he believed if the city had collection stations it would materially reduce the cost of collections, whether the city did it or had it done by contract. He explained that the stations could be constructed to minimize nuisances. He suggested that they be constructed of concrete, so they could be flushed regularly. Three stations at this time would be sufficient, Mr. Sherrerd thought. Investigation is to be made immediately and sites suggested for plants.

Reduction Plant Bankrupt.

Springfield, Mass.—The garbage situation continues tangled and the Merg Reduction Company is bankrupt. Of the \$30,000 of assets estimated by the company in its bankruptcy petition, \$25,000 is a claim against the city of Springfield for alleged breach of contract in the disposal of garbage. The \$5,000 consists of debts due on open accounts. The liabilities total \$107,000, of which all but about \$7,000 are said to be secured. Meanwhile the garbage problem still continues unsolved, but developments are expected shortly. No doubt exists that the city will refuse to operate the Merg company plant itself permanently, although it might operate the plant temporarily until a new plant is built. It expects only to get what it can in the way of salvage out of the present plant. Also when the city builds a new plant, as it is expected it will, it will not be on the present site of the Merg company. Suits had been brought for about \$12,000 for alleged damages to property because of the odors from the plant while it was in operation. In the Suffolk county court the company sues the city for \$25,000 damages for failure to turn over to the company its hotel garbage.

Guinea Pig Witnesses in Garbage Case.

New York, N. Y.—Hearings have been resumed before the commission appointed by Governor Whitman to enquire into the charge that the proposed Staten Island garbage plant would be a nuisance and dangerous to the health of Richmond borough and cities in New Jersey. The hearing took place before Dr. Lindsay R. Williams, deputy commissioner of the State board of health, who was assisted by Professor William H. Whipple, of Harvard University; Charles H. Horton, consulting engineer of the State board of health, and Deputy Attorney General George Chamberlain. Much scientific testimony was brought to show that the fumes of the garbage plant would be in-

jurious. Dr. August Pacini, a Brooklyn pathologist, used fumes obtained at the New Bedford (Mass.) garbage plant to kill several guinea pigs. These fumes were said to be identical with those which would be given off by the proposed plant, and the pigs died in less than ten minutes. Edward K. Gill, a deputy State fish and game warden, and Austin S. Johnson testified that ice in the Kills would often make it impossible to unload the garbage from the barges in which it would be sent to the plant. In addition, it was said that the discharge from the plant, which was to handle 2,000 tons of garbage daily, would poison the water supply of the north shore of Staten Island, many persons taking their water from wells near the shore line.

RAPID TRANSIT

The New York Car Strike.

New York, N. Y.—The strike on all the traction lines in the city continues, no headway having been made by the continual conferences between Mayor Mitchel, Chairman of the Public Service Commission Straus, the railway heads and the strike leaders. The sympathetic strike threatened for the beginning of the week was postponed for a few days pending more conferences. Service has not improved since the beginning of the strike and the number of accidents caused by the operation of cars by crews of ignorant strikebreakers are increasing, twenty-six having been injured in the latest collision in the Bronx. A number of strike-breakers have left the work because of ill-treatment, virtual imprisonment in the car barns and cut pay. The strikers are being vigorously backed by the unions of the city and the boycott of the struck lines by union members and sympathizers is growing daily. The up-state public service commission has decided that any action it might take at this time with a view to settling the street railway strike in Westchester County or compelling the operation of cars in Yonkers would be fruitless because of a local ordinance requiring traction operatives to have at least fifteen days' experience.

Bay State Six Cent Fare Denied.

Boston, Mass.—The Public Service Commission has decided to deny the petition of the Bay State Street Railway Company for an increase in fares from five to six cents. The commission indicates that it will approve a new schedule of fares, if filed, carrying a fare increase in some rural sections. In fifteen cities the fare unit is to remain at five cents. They are Boston (including Hyde Park), Brockton, Chelsea, Everett, Fall River, Haverhill, Lawrence, Lowell, Lynn, Malden, Melrose, Quincy, Revere, Salem and Taunton. These are, in general, the districts in which the company has proposed to sell nine tickets for fifty cents. The five-cent zones radiating from these centers include in whole or in part adjoining cities and towns. Concerning the other districts in which an advance in fares may be made the report says: "The other lines operated by the company in general form part of the interurban routes as distinguished from what may be called the urban and suburban portions of the system and are located in the less populous districts. If the company wishes to increase the prevailing fares upon these lines it is just and reasonable, in our judgment, for it to do so. * * * This finding, however, is not intended to preclude the company from filing a new notice and schedule embodying such changes of this character as it deems proper, when opportunity may be afforded for a more detailed consideration of the circumstances of each particular case." The report, which is the result of hearings that have extended over an entire year, is one of the most interesting ever made by a public service commission anywhere, as well as the most voluminous ever made by a Massachusetts commission on any single subject. It enters into the whole matter of street railway operation, while the conclusions, upon which the findings are really based, discuss the matter of consolidations in general and the merger of the various roads which make up the Bay State in particular. The company's methods of reaching a valuation upon which it asked for a return is specially

turned down, the board quoting extensively from other public service commissions and from rulings of the state and federal courts to demonstrate that the "reproduction value," so-called, is neither just nor an accurate measure of property valuation for purposes such as that upon which it was called to pass judgment. The Bay State based its case upon that sort of a valuation and Robert M. Feustel, the Wisconsin expert, was employed for more than two years at a cost of more than \$150,000 to find the reproduction cost of the property that is comprised within the system. The practice of cities and towns "holding up" the company for street paving and other improvements as the price of concessions it desires is specifically frowned upon. In this connection the report deals with the commutation tax, the law establishing which was passed in 1898. It points out that that law has cost the Bay State company \$2,000,000 since it was enacted, but that, regardless of this expenditure, the company has been compelled to pay its share of street paving in addition. The report declares that this imposition is unfair to the company and intimates that it is really a burden to the patrons of the road, for the expenditures must be met out of earnings and the public is therefore compelled to pay, either through decreased service or by increased fares. The board deals also with the matter of the Bay State's real estate holdings and recommends that much of this property be disposed of on the most favorable terms possible. A great deal of this property, it was brought out at the hearings, is really in the market, but the impossibility of securing the price set upon it has so far prevented a sale. The board points out that nearly \$400,000 of the road's resources are represented in these holdings and the actual returns upon it are slightly above \$4,000. Recommendation is made also that the company might adopt a more economical style of rolling stock and suggests many other things, quoting from the report of Bion J. Arnold of Chicago, the expert employed by the commission to study the system and report upon it, that the territory between Lowell and Haverhill, including a passage through Lawrence, is excellently adapted for experiments on some sort of fast interurban service with large up-to-date cars. The report deals exhaustively in some parts with the duties of the company to the public and lays it down as a principle that the only purpose of the corporation is to render "service." That is what the public pays for, it says, and it then goes on to say that neither the management nor the investors have any right to believe that the public is obliged to pay for "blunders." These, it says, are properly the burden of the stockholders responsible for them, whether that responsibility be active or merely quiescent.

Six-Cent Fare in Connecticut.

Bridgeport, Conn.—For the first time in the history of Connecticut trolley lines six-cent fares will be charged. The Bridgeport and Danbury Company, which operates a system between this city and Long Hill, has announced that the line will hereafter be constituted of two fare zones, in each of which the fare will be six cents. The cars will not run to the city center, as has been the custom for some time past, but Bethany chapel will be the terminal. It is understood that the move is one of economy, since the Connecticut company has been operating its trolleys to Bethany chapel since August 1, following a long campaign by residents of the section. The boost in fare will be added revenue which will serve to compensate for the loss created by the Connecticut company's action in deciding to run its cars to the chapel.

MISCELLANEOUS

The New York Wire Tapping Case.

New York, N. Y.—The charges of conspiracy, perjury and libel brought by Mayor Mitchel and W. J. Doherty, second deputy commissioner of charities, against Mgr. John J. Dunn, chancellor of the New York Archdiocese; the Rev. Dr. William B. Farrell, Robert H. Hebbard, ex-secretary of the State board of charities, and the late Dr. Daniel C.

Potter have been dismissed by Supreme Court Justice Greenbaum, who had conducted a John Doe inquiry. He also exonerated Police Commissioner Arthur Woods of the countercharge of the priests that he had violated the law in tapping telephone wires of the International Ladies' Garment Workers' Union when he thought a strike was impending. Charges and countercharges grew out of the charities investigation conducted by Commissioner Charles Strong and the consequent disclosure of the police wiretapping, which arrayed the mayor and the heads of the Catholic church in this city against each other. Justice Greenbaum's decision is thought to put an end to the controversy, and contains exoneration also of the members of the police wiretapping squad, who, he finds, faithfully performed their duty. Justice Greenbaum found that the evidence against Father Farrell and his associates failed to establish the charge that they had conspired to keep witnesses from testifying before the Strong committee, or to convict them of libel or perjury in connection with the publication of pamphlets attacking the investigation and the men behind it. He ruled further that Mr. Strong had exceeded his powers as commissioner when he tried to ascertain the authorship of the documents. Of the tapping of wires by the police Justice Greenbaum said: "The complaint largely relied upon the testimony of the officers who composed the special detective squad whose duty it was to report telephone conversations for the purpose of detecting crime. A vast amount of testimony was taken before me, and the testimony of police officers justifies the finding that they were faithfully discharging the duties assigned to them by the police commissioner, and that their testimony was of higher value than that of the ordinary witness who may attempt to repeat a conversation in which he had no special interest." Commissioner of Charities John A. Kingsbury and Special Deputy Corporation Counsel William H. Hotchkiss, who acted as legal adviser to Mr. Kingsbury, are now under indictment for wiretapping, returned by a Brooklyn grand jury last May.

City Planning Big Park.

Hibbing, Minn.—A committee has been appointed by the council to determine the costs of the seven thousand acres of land along Sturgeon lake, which the city is planning to secure for a municipal park. All but 700 acres, which are owned by the state, of the 7000 acres are owned by corporations or private individuals.

Start on Harbor Improvements.

Richmond, Cal.—First steps toward harbor improvements to cost \$1,000,000 have been taken, the city council having ordered the mayor and city clerk to sign a dredging and fill contract with the Bay Counties Land Company. The agreement, which has been under consideration for several months by the council, demands \$60,000 in dredging from the Bay Counties Land Company, for which the city is to compensate the company with thirty-one acres of waterfront property. It is estimated that the deepening of the inner harbor and the construction of a bulkhead with an eight-foot fill on the present mud flats will cost approximately \$1,000,000.

City May Pay for "Development Work."

Cambridge, Mass.—Cambridge city officials had a right to pass an order authorizing the expenditure of \$1,500 for industrial developments, according to the view taken by judge Crosby of the supreme court, who ordered dismissed the bill in equity brought by James T. Barrett and nine other taxpayers of Cambridge against the city and mayor Rockwood. The petitioners claimed that both the mayor and the city council overstepped their bounds when such an appropriation was made. In his memorandum, judge Crosby says: "I am of opinion that the appropriation of \$1,500 to be expended in the industrial development of the city of Cambridge, and in inducing new industries to locate in that city, could be found by the city council to be a public purpose under the revised laws." The money is to be used as salary for Henry Mahoney who was appointed agent by mayor Rockwood to carry on investigations concerning business conditions in the city.

LEGAL NOTES

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Assessments—Property Subject.

St. Louis County et al v. Board of Education of City of Duluth. In re Lester Park School.—Public school property may, by legislative authority, be subjected to assessment for local city improvements.—Supreme Court of Minnesota, 158 N. W. R., 635.

Powers of Municipalities.

Laprairie et al v. City of Hot Springs.—Municipalities possess no inherent powers, and can exercise only such powers as are delegated to them by the Legislature, either expressly or by necessary implication.—Supreme Court of Arkansas, 187 S. W. R., 442.

Removal of Officers—Grounds—Acts in Previous Term.

Hawkins v. Common Council of City of Grand Rapids.—Where a city officer succeeds himself, he may be removed for misconduct during the preceding term.—Supreme Court of Michigan, 158 N. W. R., 953.

Contracts—Submission to Competitive Bidders.

Philadelphia Co. v. City of Pittsburgh.—A contract between a city of the second class and a gas company for a supply of gas for a municipal hospital, awarded without previous advertisement and without competitive bidding, is void, where there were other companies furnishing gas in the city, though the other companies to have fulfilled the contract would have had to lay pipe for some distance.—Supreme Court of Pennsylvania, 97 A. R., 1083.

Use of Street—Law of the Road—Actions for Inquiries

Morrison et al v. Clark.—The driver of a vehicle proceeding on the wrong side of a highway is not liable for injuries sustained by another in collision with his conveyance, unless his negligent act of driving on the wrong side was the proximate cause of the injury, since there must be a casual connection between the unlawful and wrongful act of driving on the left side and the resulting injury.—Supreme Court of Alabama, 72 S. R., 305.

Sidewalk Improvement—Sufficiency of Resolution.

Langstaff v. Town of Durant.—Where a town's resolution, declaring the construction of concrete sidewalks necessary, incorporated the ordinance prescribing specifications of sidewalks, which read that all sidewalks should be of brick or concrete material, five feet wide on all residence streets, built to the street line and of even grade, etc., such resolution was sufficient as describing the character of the improvement so as to enable the property owner to do the work himself.—Supreme Court of Mississippi, Division B., 72 S. R., 236.

Revocation of Building Permit—Grounds.

State ex rel. Greenville v. Nash, Commissioner of Parks et al.—The court will not compel the building inspector to revoke a building permit unless the construction authorized thereby clearly violates the building regulations in such substantial respects as to endanger the public health, safety or welfare. The trial court correctly held that the facts alleged would not justify the court in requiring the revocation of the permit in question.—Supreme Court of Minnesota, 158 N. W. R., 730.

Liability for Property Damaged—Waiver.

City of Meridian v. Hudson.—Where a property owner joined in petitioning for the opening and grading of a street, he waived claim for damages to his property by such grading, if properly done, especially where the street formerly extended to his line, since he then was charged with notice that it would be continued on an appropriate grade conformable with that already established.—Supreme Court of Mississippi, Division A, 71 S. R., 574.

NEWS OF THE SOCIETIES

Calendar of Meetings.

- Sept. 19-21.**—LEAGUE OF IOWA MUNICIPALITIES. Nineteenth annual meeting, Dubuque, Ia.
- Sept. 20-22.**—MASSACHUSETTS STATE FIREMEN'S ASSOCIATION. Annual convention, Gloucester, Mass. Secretary, D. Arthur Burt.
- Sept. 26.**—NATIONAL SMOKE PREVENTION ASSOCIATION. Eleventh annual meeting, St. Louis, Mo. Secretary, Frank A. Chambers, Smoke Department, Chicago, Ill.
- Sept. 26-28.**—LEAGUE OF VIRGINIA MUNICIPALITIES. Annual meeting, Clifton Forge, Va. Secretary, Luther C. Brinson, Portsmouth, Va.
- Oct. 2-6.**—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. Congress, Grand Rapids, Mich. Secretary, H. S. Braucher, 1 Madison avenue, New York City.
- Oct. 6.**—NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION. Study and conference, Deming Hotel, Terre Haute, Ind. Secretary, Will P. Blair, Cleveland, O.
- Oct. 9-11.**—NATIONAL HOUSING ASSOCIATION. Annual meeting, Providence, R. I. Secretary, Lawrence Veiller, 105 East 22d St., New York City.
- Oct. 9-13.**—AMERICAN ELECTRIC RAILWAY ASSOCIATION. Annual convention, Atlantic City, N. J. Secretary, E. B. Burritt, 8 West 40th street, New York City.
- Oct. 9-13.**—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS. Twenty-third Annual Convention, Robert Treat Hotel, Newark, N. J. Secretary, Charles Carroll Brown, 702 Wulsin Building, Indianapolis, Ind.
- Oct. 10-11.**—CENTRAL STATES DIVISION, AMERICAN WATERWORKS ASSOCIATION. Twentieth annual convention, Hollenden Hotel, Cleveland, O. Secretary, R. P. Bricker, Shelby, O.
- Oct. 10-12.**—AMERICAN ASSOCIATION OF PARK SUPERINTENDENTS. Secretary, R. W. Cotterill, Seattle, Wash.
- Oct. 10-15.**—LEAGUE OF CALIFORNIA MUNICIPALITIES. Annual meeting, Visalia, Cal. Secretary, H. A. Mason, Pacific Bldg., San Francisco, Cal.
- Oct. 11.**—UNION OF BRITISH COLUMBIA MUNICIPALITIES. Annual convention, Vernon, B. C. Secretary, Ex-Reeve H. Bose, Surrey Center, B. C.
- Oct. 11-13.**—LEAGUE OF KANSAS MUNICIPALITIES. Annual meeting, Independence, Kan. Secretary, C. H. Talbot, University of Kansas, Lawrence, Kan.
- Oct. 12-14.**—LEAGUE OF WASHINGTON MUNICIPALITIES. Annual convention, Everett, Wash. Secretary, Dr. Herman A. Brauer, University of Washington, Seattle, Wash.
- Oct. 13, 14.**—SOCIETY FOR STREET CLEANING AND REFUSE DISPOSAL. Annual convention, Street Cleaning Department Building, New York City. Secretary, J. R. Buchanan, Municipal Bldg., New York City.
- Oct. 16-21.**—NATIONAL SAFETY COUNCIL. Fifth Annual Safety Congress, Detroit, Mich. Secretary, W. H. Cameron, Continental and Commercial Bank, Chicago, Ill.
- Oct. 17-20.**—AMERICAN GAS INSTITUTE. Annual meeting, Chicago, Ill. Secretary, G. G. Ramsdell, New York City.
- Oct. 18-19.**—LEAGUE OF MINNESOTA MUNICIPALITIES. Annual convention, Red Wing, Minn. Secretary, Richard R. Price, University of Minnesota, Minneapolis, Minn.
- Oct. 24-27.**—AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Convention, Cincinnati, O. Secretary, Prof. Sellkar M. Gunn, Boston, Mass.
- Oct. 28-28.**—LEAGUE OF TEXAS MUNICIPALITIES. Annual convention, Hillboro, Tex. Secretary, Prof. H. G. James, University of Texas, Austin, Tex.
- Nov. 15.**—ILLINOIS MUNICIPAL LEAGUE. Annual convention, Urbana, Ill. Secretary, John A. Fairlie, University of Illinois, Urbana, Ill.
- Nov. 15-16.**—NATIONAL CONFERENCE ON UNIVERSITIES AND PUBLIC SERVICE. Third annual conference, Philadelphia, Pa. Secretary, Edward A. Fitzpatrick, Box 380, Madison, Wis.
- Nov. 16-18.**—FIRE MARSHALS' ASSOCIATION OF NORTH AMERICA. Annual convention, Nashville, Tenn.
- Nov. 20-22.**—MONTANA MUNICIPAL LEAGUE. Annual meeting, Lewiston, Mont. E. S. Judd, City Clerk, Billings, Mont.
- Nov. 20-23.**—CITY MANAGERS' ASSOCIATION. Third annual convention, Springfield, Mass. Secretary, O. E. Carr, Niagara Falls, N. Y.
- Nov. 21.**—MASSACHUSETTS CIVIC LEAGUE. Conference and annual meeting, Springfield, Mass. Secretary, Edward T. Hartman, 3 Joy Street, Boston, Mass.
- Nov. 22, 23.**—MUNICIPAL RESEARCH WORKERS. First annual conference, Springfield, Mass. L. D. Upson, Program Committee, Detroit, Mich.
- Nov. 22, 23.**—TRAINING SCHOOL FOR PUBLIC SERVICE. Special conference, Springfield, Mass. Charles A. Beard, Supervisor, 261 Broadway, New York.
- Nov. 23, 24.**—CIVIC SECRETARIES' CONFERENCE. Annual conference, Springfield, Mass. Secretary, Howell Hart, Milwaukee, Wis.
- Nov. 23-24.**—MASSACHUSETTS FEDERATION OF PLANNING BOARDS. Annual convention, Springfield, Mass. Secretary, Arthur C. Comey, Cambridge, Mass.
- Nov. 23-25.**—NATIONAL MUNICIPAL LEAGUE. Annual convention, Springfield, Mass. Secretary, Clinton Rogers Woodruff, 705 North American Building, Philadelphia, Pa.
- Dec. 27-30.**—AMERICAN ECONOMIC ASSOCIATION. Annual meeting, Columbus, Ohio. Secretary, A. A. Young, Ithaca, N. Y.
- Dec. 27-30.**—AMERICAN STATISTICAL ASSOCIATION. Annual meeting, Columbus, O. Secretary, Carroll W. Doten, 491 Boylston street, Boston, Mass.
- Dec. 26-31.**—AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Annual meeting, New York City. Secretary, L. O. Howard, Smithsonian Institute, Washington, D. C.
- Jan. 20, 1917.**—WESTERN PAVING BRICK MANUFACTURERS' ASSOCIATION, Kansas City, Mo. Secretary, G. W. Thurston, 416 Dwight Bldg., Kansas City, Mo.
- Jan. 23-25, 1917.**—AMERICAN WOOD PRESERVERS' ASSOCIATION. Annual meeting, New York City. Secretary, F. J. Angier, B. & O. Mt. Royal Sta., Baltimore, Md.
- Feb. 5-12, 1917.**—AMERICAN ROAD BUILDERS' ASSOCIATION. Seventh American Good Roads Congress and Eighth National Good Roads Show, Mechanics' Hall, Boston, Mass. Secretary, E. L. Powers, 150 Nassau street, New York City.

National Tax Association.

The tenth annual conference on taxation was held at the Claypool Hotel, Indianapolis, Ind., August 28-31, under the auspices of the National Tax Association. Samuel T. Howe, president of the conference, opened the first session Monday afternoon. Governor Ralston was on the program for a speech but was unable to attend, and Attorney-General E. B. Stotsenburg spoke for him.

At this opening session, Allen Ripley Foote, the founder of the association, spoke on "The Birth, Work and Future of the National Tax Association."

Mr. Foote, after relating the history of the association, discussed the tax subject in general.

"The growth in taxation—municipal, state and federal—during the ten years covered by this history is a portentous danger signal," he said. "The tendency to increase the objects for

which money arbitrarily taken from taxpayers may be expended and the lack of efficiency in the administration of government affairs must be checked or the ability to pay will become exhausted.

"Municipal, state and federal governments must thoroughly learn the lesson that nothing is so mobile as the instruments of commercial capital and credits; that business enterprises are easily moved; that no municipality, state or nation can improperly or unjustly tax business capital, business enterprises and the instruments of credit, without suffering loss, because business capital and business enterprises will leave the jurisdiction of an antagonistic government.

"Municipal, state and federal governments will learn by the teachings of experience, if they refuse to learn by the teachings of reason, that they can not hold business capital and business enterprises subject to their jurisdiction if they do not exercise their powers of taxation and regulation wisely."

George E. Pomeroy, of Toledo, O., was elected permanent chairman of the conference by the executive committee, and Robert M. Campbell, of Cornell university, Ithaca, N. Y., was chosen permanent secretary. Nils P. Haugen, chairman of the Wisconsin tax commission, is the chairman of the resolutions committee.

In order that nothing might interfere with the banquet at the West Shore Club in the evening the program announced for the Tuesday night session was moved up to the afternoon. In addition to the address by Mr. Howe it included the following:

"Some Aspects of Canadian War Finance," Dr. Adam Shortt, member of the civil service commission of Canada; "Federal Inheritance Taxation," Nils P. Haugen, of Wisconsin; report of the committee on federal income tax, Professor E. R. A. Seligman, of Columbia university.

Methods by which it was believed the taxation system of the state could be improved were discussed by Fred A. Sims, formerly a member of the Indiana tax board; Professor W. A. Rawles, of Indiana university; Charles J. Orbison, special counsel for the state tax board, and Frederick Van Nuys, of Indianapolis.

Speaking on "Divorcing the Assessor from Politics," Mr. Sims said:

"The assessor occupies, perhaps, as unenviable a position as an officer as any of our public servants. The hangman is the only one which occurs to mind to be in a worse situation.

"Abused and disliked almost as much as his ancient collateral ancestor—the publican—he is blamed by the individual whose property he lists and condemned by the body politic for lax enforcement of law as well as favoritism. From the moment of qualifying he faces an army of enemies and a sea of trouble. And if he boldly girds about him the armor of the law and sallies forth with bold determination he quickly discovers

'The Sword of Damocles' suspended over his personal future. He is confronted by fear and unsupported by real public opinion. He is charged with a serious responsibility and manacled by impossible conditions. If he enforced the law in this state, wreck and ruin would follow in his path."

In his address on "The Income Tax as a Measure of Relief for Indiana," Professor Rawles said:

"The system of taxation in operation in Indiana is the general property tax. It is based on the theory that each taxpayer should make contributions to the support of his government in proportion to the amount of property which he possesses. It assumes that separate parcels of property are assessed at their true values and are taxed at a uniform rate.

"The system worked fairly well in the early period of its use, because tax rates were low and the economic conditions were simple. When the practice of taxing property (including notes, bonds and mortgages) on the ad valorem basis was first introduced into Indiana in 1835 and 1836 the rate for state pur-

poses was only 5 cents on each \$100. During the period of internal improvements the rates were increased. But at the time of the adoption of the present Constitution they were still very low, being, in 1851, 30½ cents for state purposes and 43 cents on the average for the local governments, a total of 73½ cents.

"But now, while our industry is becoming highly diversified, while corporations have multiplied in number and financial power, while property has become heterogeneous in character and intangible property constitutes probably one-third of the private wealth of the citizens—the general property tax, once appropriate but now out of date and impracticable, once equitable but now confiscatory and iniquitous, once respected but now condemned as 'a farce, a sham and a humbug,' and as having 'no parallel except in the records of the middle ages and of the inquisition'—this system of taxation has persisted in substantially its original form."

Mr. Rawles discussed at considerable length a plan for an income tax in Indiana. (Continued on page 368.)

PERSONALS

Low, Seth, former mayor of New York City and for many years president of Columbia University, died Sept. 17 at his country home near Bedford Hills, N. Y. Twice mayor of the city of Brooklyn, mayor of New York, 1901-03, and for eleven years president of Columbia University, Dr. Low was prominently identified with New York affairs for more than thirty years. In addition, he was nationally prominent both as an educator and in offices to which he was appointed by various presidents. He was born in Brooklyn, on Jan. 18, 1850. Dr. Low was educated in the Brooklyn Polytechnic Institute and Columbia College, from which he was graduated in 1870 with the degree of A. B. In 1878 he organized and became the first president of the Brooklyn bureau of charities, one of the first societies formed for the promotion of co-operation and for the prevention of waste and imposition in charity service. Dr. Low was elected mayor of Brooklyn in 1881. Two years later he was re-elected. He carried the government of Brooklyn to such a high point of efficiency by insisting on business principles that his terms as mayor were regarded as remarkable. In 1900 Dr. Low ran a second time for reform as mayor of New York, and was elected by a large majority. He gave the city a clean and progressive administration along the lines he had successfully introduced in Brooklyn. Although retired from active politics for several years, Dr. Low maintained his interests, and took an active part in the effort for legislation for the reform of the system of elections, and the betterment of other conditions. Dr. Low was chairman of the committee on city government in the recent constitutional convention.

Bridges, J. B., has resigned as mayor of Luling, Texas.

Champlin, Charles, chief of the Rhinecliff fire department, has resigned.

Clow, A. D., has been elected chief of the Catskill, N. Y., fire department, succeeding Henry F. Place.

Doherty, Thomas, mayor of Sarnia, Ont., died suddenly Sept. 6, after delivering an address.

Foster, W. J., has been elected superintendent of the street cleaning department of Jacksonville, Fla.

Gilman, Lindley W., chief of police of Bangor, Me., has resigned.

Gray, James, former mayor of Minneapolis, Minn., died at Washington, D. C., Sept. 8. He was 54 years old.

Luce, John A., mayor of Bozeman, died Sept. 2nd, at his home in that city.

Tillhof, John P., has been appointed to the Kansas City, Mo., water board.

Wyman, John W., chief of police of East Liverpool, O., has resigned.

Young, George W., has been elected mayor of Eminence, Ky., to fill the vacancy caused by the death of Mayor S. W. Booker.

PROBLEMS CITIES ARE STUDYING WITH EXPERTS

High Point, N. C., is making a number of PAVING improvements. Anderson & Christie, Charlotte, N. C., are consulting engineers for the work.

Red Cloud, Neb., is constructing a \$10,000 SEWER SYSTEM, from plans and specifications prepared by Grant & Fulton, 505 Bankers Life Building, Lincoln, Neb.

In constructing new storm SEWERS, Marion, Ind., had plans and specifications drawn up by H. R. Green, engineer, Union block, Cedar Rapids, Ia.

Zanesville, O., is to undertake a number of PAVING improvements. Carl R. Spencer, Masonic Building, Zanesville, prepared the plans.

Mineral Point, Wis., is to drill new wells for its WATER SUPPLY, following the consulting engineering advice of W. G. Kirchoffer, Madison, Wis.

Sand Springs, Okla., Commerce, Okla., and Cordell, Okla., are all to construct SEWER SYSTEMS from plans made by the Benham Engineering Company, Oklahoma City, Okla.

The village of Kenyon, Minn., is to improve its WATER DISTRIBUTION system, plans and specifications having been drawn up by Wm. C. Fraser, 411 Hackney Building, St. Paul, Minn.

An ELECTRIC TRANSMISSION line and DISTRIBUTION SYSTEM are to be constructed by the village of Hoffman, Minn., with the consulting engineering services of Earl D. Jackson, St. Paul, Minn.

A SEWER system to cost \$42,000 is being planned for Garden City, Kans., by the Ruckel Engineering Company, Hutchinson, Kans.

Hammonton, N. J., is to lay a concrete PAVEMENT following plans and specifications prepared by J. C. Remington, Jr., 601 Market street, Camden, N. J.

PAVING improvements by Prospect Park, Pa., are to follow plans and specifications prepared by A. D. Damon, engineer, Postoffice Building, Darby, Pa.

Petersburg, Ill., is to make several PAVING improvements on which Goodell & Millard, 117½ Washington street, Beardstown, Ill., are acting as engineers.

A \$1,200,000 VIADUCT is to be constructed by Summit county, Akron, O. Wilbur Watson, Leader Building, Cleveland, O., is consulting engineer on the project.

Storm SEWERS are to be installed by South Fork, Pa., following the completion of plans by C. P. Collins Company, engineers, Johnstown, Pa.

The Kennebec Water District, Waterville, Me., is to construct a distributing RESERVOIR. The plans and specifications for the project were the work of Metcalf & Eddy, 14 Beacon street, Boston, Mass.

Belmar, N. J., in constructing new PAVEMENT, has the consulting engineering services of Clyde Potts, 30 Church street, New York, N. Y., in the preparation of plans, specifications and contract forms.

NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

HYDRANT VALVE

For Fire Supply Service.

Fire underwriters' regulations require a valve between water mains and fire hydrants. In many cases it is impossible to place a gate valve without first resetting the hydrant and placing the fire main deeper below the street surface as the fire main may be laid close to the surface and the gate valve stem would project two to four inches above. In installing, pavement has to be removed, pipe cut, joints made and the pavement restored. In order to reduce the expense of this work and to eliminate much of the digging, the Wetmore hydrant valve has been developed.

The accompanying illustration shows a sectional view of the invention. The hydrant stand pipe, which is shown in the illustration as extending upward, and a water pipe which is shown as extending horizontally, are connected by the valve casing. Mounted in the casing is a spider intended to support a valve stem on which a valve is mounted for closing the water pipe. The other end of this valve stem is threaded and engages a threaded sleeve supported in the bracket on the casing, the sleeve including a beveled gear. A shaft provided with a second beveled gear is supported on the casing and meshes with the gear on the sleeve. Disposed within the casing, adjacent the end of the stand pipe, is a collar in which a valve stem guide is mounted. The collar includes a valve seat closed by a leather valve.

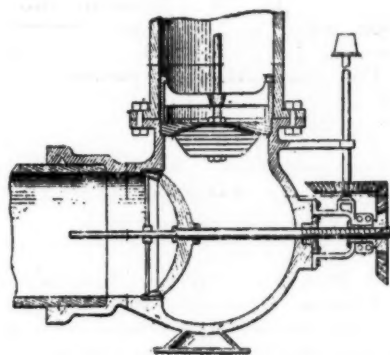
In applying the valve an opening is made in the sidewalk. This opening does not have to be as large as the opening required for a gate valve. The stand pipe is then removed from hydrant ell as well as the old hydrant ell. The Wetmore valve is then put in place of the old ell and the stand pipe replaced. An ordinary valve box may be then placed over the gear mechanism, and the small portion of the sidewalk removed is easily replaced.

The valve is the invention of H. C. Wetmore, P. O. Box 17, Key West, Fla.

KEROSENE TRACTORS

In Road-Building Work.

Gasoline tractors have proved a decided economy in road building over horse traction and it is now claimed that kerosene operated machines are still more economical. The claim is based on the lower fuel cost, gasoline costing from 80 to over 100 per cent more than kerosene. For utilizing kerosene, distillate and other low-priced fuels the Titan and Mogul tractors have been developed. It is claimed that



WETMORE HYDRANT VALVE.

with these, when properly operated, one horse-power hour can be obtained on 1.08 pints of kerosene as compared with one pint of fuel used in the gasoline tractor. This, it is estimated, means a saving of about one-half in power costs in road building.

The Mogul tractor is made in two sizes: 8-16 and 12-25 horsepower and the Titan in three: 10-20, 15-30 and 30-60. The smaller Mogul can be used for grading, leveling and dragging and all road building and maintenance work. It develops 8 horsepower at the drawbar. It has a small turning radius, necessary in road work. It is equipped with a low-speed kerosene motor of very simple construction, and the crank case is completely enclosed against dirt and dust. The mixer is exactly like the one used on larger Mogul tractors. It is very simple, yet it handles a great

variety of fuels—kerosene, distillate down to 39 degrees Baume, gas oil, solar oil, naphtha and gasoline. Cooling is by large hopper holding 35 gallons. Ignition is make-and-break, current being furnished by oscillating type magneto, no batteries being required. Main bearings and piston are lubricated by an automatic force feed oiler. In the planetary transmission used the gears are always in mesh, being thrown in and out of action by means of hand brakes. There is no danger of stripping; the gear case is tight and the gears run in oil. Power is transmitted to drive wheels by chain. Steering is by hand wheel convenient to the driver, operating a non-reversible worm and sector steering gear. Speed is two miles per hour.

The Titan 10-20 tractor is also suited for all types of road work, developing 10 h. p. at the drawbar. Its motor is a two-cylinder, built in units which are easily accessible and designed to use low price fuel. Ignition is jump-spark. The machine has two speeds ahead and one reverse, transmission being sliding gear controlled by one lever. Forward speeds are 1.85 and 2.50 miles per hour, and reverse is 2.50 miles. Chain drive to both rear wheels eliminate gears and give more even and flexible power distribution. Steering is automobile type with hand wheel and specially designed steering knuckle giving easy and positive control. Brake is foot power, by contracting bands on both rear wheels.

The heavier machines are built along similar lines. In the case of the Titan 15-30 tractor, however, the motor is a four-cylinder. It is set horizontal across the machine, so that power is delivered direct through spur gears without bevel gear. The speeds of this machine are 2.4 and 1.87 miles per hour. The largest size Titan has a speed of 2.08 and the Mogul 12-25 goes 2 or 3 miles an hour.

These tractors are in wide use for road work in all sections of the country and have been found very economical. Otis Collins, chairman of the road



committee, Rapides Parish, La., found that road-building by mule power cost \$26 a mile, compared with the cost by tractor of only about \$4.50 a mile. Operating costs per day were found to be only slightly more in the case of the tractor. H. W. Jackson, county commissioner; Mathew Harr, road supervisor, and W. E. Smith, engineer, Yuma, Colo., found that \$7.17 a day was the total of costs of doing the same work with a Mogul 8-16 that horses would do at a cost of \$20 a day.

The accompanying illustrations show the Mogul 8-16 and the Titan 10-20 and some of the machines in action. The tractors are made by the International Harvester Company of America, Harvester Building, Chicago, Ill.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago—The leading interest is the low bidder for 1,000 tons of pipe for the city of Chicago. Other new business of size is lacking. Quotations: 4-inch, \$33.50 to \$34; 6-inch and larger, \$30.50 to \$31; class A, \$1 extra. Birmingham—The gas and water pipe shops have taken on greater activity, and yards have been well emptied by rush shipments to the Far West. Inquiries are increasing and larger volumes are inquired for. The sanitary shops are doing only a fairly good business. Quotations: 4-inch, \$28; 6-inch and upward, \$25; 16-foot lengths, \$1 extra. San Francisco—Buyers have been endeavoring to accelerate deliveries as much as possible, but the car shortage has held back many shipments. The town of Glendale, Cal., has ordered about 1,000 tons, and Santa Monica, Cal., will shortly take bids for a large water system bond issue. Madera, Cal., has taken bids for 1,600 feet of 6-inch. New York—The only public letting of importance in this vicinity is that of New York City, which has opened bids on 218 tons of 12-inch. While municipal business continues extremely backward, private buying is of

fair proportions. Prices are firm. Quotations: 6-inch, class B and heavier, \$30.50; class A, \$31.50.

Lead.—Lead delivered promptly is commanding a premium. Quotations: New York, 6.75 cents; St. Louis, 6.60.

The Hydrated Lime Bureau of the National Lime Manufacturers' Association, Arrott Building, Pittsburgh, Pa., has just issued for general distribution a new booklet, entitled "Dependable Concrete," which discusses in detail the use of hydrated lime in concrete and advantages of the method. It explains how hydrated lime will partially overcome tendencies in concrete such as excessive quantities of mixing water, minimizing or eliminating segregation, watertightness, expansion or contraction due to moisture changes are taken up in the booklet. Each point is thoroughly explained and illustrated with photographs of structures in which hydrated lime was used. These include the Market street bridge, Chattanooga, Tenn.; Chouteau avenue viaduct, St. Louis, Mo.; Whipple bridge for the department of public roads, Rhode Island; St. Louis filtration plant; Stockton street tunnel, San Francisco; Stony Brook sewer, Boston, Mass.; concrete reservoir, La Crosse, Wis.; Coleman Du Pont road, Delaware; pavements in Superior, Wis.; State highways at Northbridge and Randolph, Mass.

NEWS OF THE SOCIETIES

(Continued from page 366.)

diana which he believed would be a good thing. He said its adoption could not make conditions worse in Indiana, for they are now about as bad as they could be, as far as the question of taxation is concerned.

The greatest impediment to efficiency in taxation is the present method of electing township assessors, according to Mr. Orbison. His subject was "The Township Assessor."

"What taxing power needs today is

more power and less restraint—more efficiency and less politics—more honesty and less pull," he said, "and what the people need to realize is the utility of taxation and that as they are just and honest in their obligations to the state, so will their government be strengthened and their living be made more secure.

"The township assessor as we find him in most states today is an impediment. While other departments of the taxing power have grown and developed, the township assessor has in the main stood still."

The speaker pictured the political conditions surrounding the choice of township assessors in Indiana. There was a lively scramble for the more lucrative offices, but the office of assessor was one of those used generally for the purpose of balancing and men of no qualifications whatever were often chosen merely because of their ability perhaps to swing a particular vote, he declared. The net result, he added, was that hundreds of people escape taxation altogether, the dishonest citizen can return for taxation but a small portion of his property, the honest man bears an unequal portion of the burden of taxation and a premium is put on lying and dishonesty.

Other addresses on the program included "Taxation and the Farmer," J. W. Brislawn, member of the Washington state tax board; "The Study of Taxation in Colleges and Universities," Professor H. L. Lutz, Oberlin college.

Herbert J. Hagerman, former Governor of New Mexico and president of the New Mexico Taxpayers' Association, spoke on "The Attitude of Taxpayers' Associations to Public Expenditures," and other addresses for the session were: "Uniform Public Accounting and State Supervision Thereof," Fred W. Blue, state tax commissioner of West Virginia; "The Asheville Board of Trade's Plan for the General Property Tax," W. Vance Brown, Asheville, N. C.; "Tax Legislation Enacted During 1916."



MOGUL
8-16
KEROSENE
TRACTOR.

Besides the business of the conference, the final session included the following addresses: "The State Income Tax vs. the Classified Property Tax," Professor Charles J. Bullock, Harvard university; "State Equalization; How the Board Should Be Constituted and Information Secured," William Bailey, president of the Utah state board of equalization; report of the committee on methods of apportioning interstate properties to the several states, Thomas W. Hulme, Philadelphia, chairman.

League of Virginia Municipalities.

The eleventh annual meeting of the League of Virginia Municipalities will be held at Clifton Forge, Va., Sept. 26, 27 and 28, and an excellent program is being prepared, embracing subjects of vital interest to our cities and towns, by speakers of local and national reputation.

The league has been in existence for ten years and has held yearly meetings in several cities, giving valuable information through the subjects discussed.

The league is the originator of the Optional Charter Act, which authorizes cities of the state to choose one of the several forms of government prescribed by said act.

It is desired that every city and town be represented at this meeting.

The officers of the league are: A. B. Davies, Clifton Forge, president; C. N. Markham, Portsmouth, first vice-president; E. R. Fuller, Richmond, second vice-president; T. J. Twyman, Madison, third vice-president; L. C. Brinson, Portsmouth, secretary-treasurer.

American Association of Engineers.

The Chicago chapter of the American Association of Engineers at its meeting on Sept. 1 had the pleasure of hearing Alderman Charles E. Merriam speak upon city government in Chicago. Mr. Merriam spoke particularly upon engineering subjects which came to his attention on the council committees, and highly commended the association for its activities in civic work. He said, "for the engineer not to take part in political affairs is high treason." The engineer is the proper citizen to give the city and the people facts regarding

public affairs because he deals with facts. We want your co-operation in engineering matters." He further stated "the department of public service is made up largely of engineering positions and it has had some good men and still has some good men, but it is only operated at about 15 per cent. or 20 per cent. efficiency."

A. H. Krom, chairman national membership committee, made a rousing talk thanking the members for their individual work which caused a remarkable record in new membership for the month of August. He informed them that the association had been growing at the rate of about 100 a month, but due to the personal campaigns of various members it was increased to over 200 new members for the month of August. The directors of the association had fixed Sept. 1 as the date to reach 1,000 members, but instead of 1,000 members the enrollment was carried beyond the 1,100 mark.

Maine Good Roads Meeting.

The date for the State-wide good roads meeting for which preliminary arrangements were made last spring has been announced. The meeting will be held at Augusta on October 4. It is planned to organize a campaign for the continuation of the present system of road building in Maine and to secure the passage by the next Legislature of a mill tax measure to provide funds for the continuation of the work.

Maine State Fire Chief's Association.

The sixth annual meeting of the association will be held at Bar Harbor, Me., Sept. 20 and 21. A program has been announced as follows:

On Wednesday, Sept. 20, at 10.30 a. m., there will be a business meeting at the Central Fire Station; 1.30 p. m., shore dinner, Woodland Park, and 40-mile ride around the island in automobiles; 7.30 p. m., special show, Star theatre.

On Thursday there will be a business meeting at the Central Fire Station and election of officers; 11.40 a. m., walk around tow path; 1 o'clock, dinner, New Florence Hotel; 2 o'clock, boat sail.

Officers of the association: President,

W. S. Mason; vice-president, M. J. Moriarity; secretary, W. N. Hellenbrand; treasurer, C. W. Bowker; directors: W. W. Berry, Waterville; Alexis Nadeau, Old Town; C. H. Bonson, Biddeford; U. S. Mills, Milford; N. N. Kendall, Freeport; G. W. Merrill, Auburn; F. M. Gates, Millinocket.

United States Civil Service Examination.

Highway Bridge Engineer (Male), \$1,800-\$2,100—October 4, 1916.

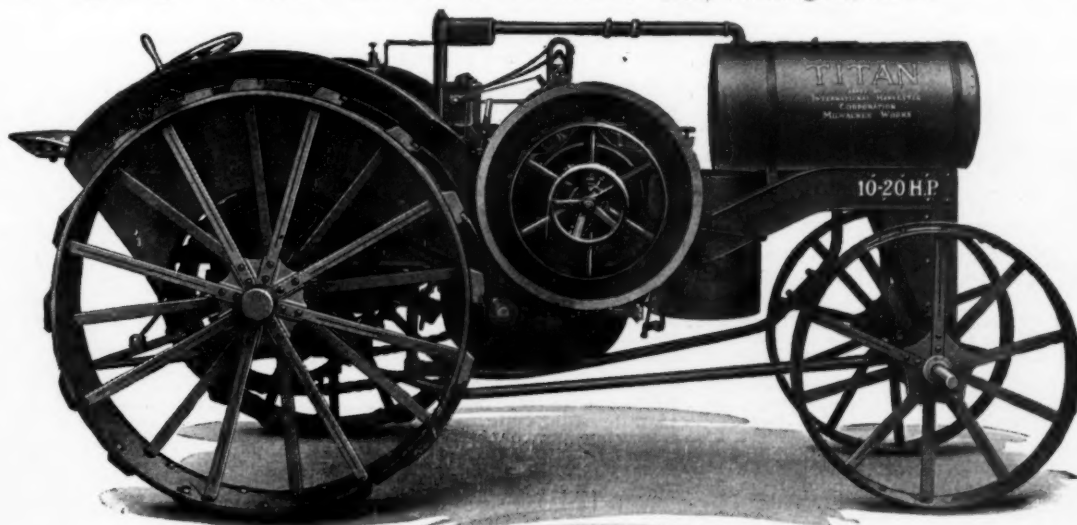
The United States Civil Service Commission announces an open competitive examination for highway bridge engineer, for men only, on October 4, 1916, at several places. From the register of eligibles resulting from this examination certification will be made to fill vacancies in this position in the Office of Public Roads and Rural Engineering, Department of Agriculture, at salaries ranging from \$1,800 to \$2,100 a year. The duties of this position will involve the making of surveys of bridge sites, superintending the construction and inspection of highway bridges, and the design and preparation of plans for highway bridges.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Practical questions in highway bridge engineering	30
2. Highway bridge drafting	20
3. Education and preliminary training	10
4. Responsible experience in bridge engineering	40
Total	100

Applicants for the examination must show that they have had not less than four years of preliminary engineering experience or that they are graduates in civil engineering from a recognized college, and that they have had at least three years' experience in bridge engineering, of which at least one year must have been in practical highway bridge engineering.

Persons who meet the requirements and desire this examination should at once apply for Form 1312, stating the title of the examination desired, to the United States Civil Service Commission, Washington, D. C.



TITAN
10-20
KEROSENE
TRACTOR.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Ind.	Danville.....10:30 a.m.,	Sept. 23..	2½ miles road construction	C. M. Havens, Co. Aud.
Ind.	Columbus.....10 a.m.,	Sept. 23..	Constructing roads	W. H. Scott, County Auditor.
Ala.	Double Springs.....	Sept. 23..	Road construction	J. S. Curtis, Probate Judge.
Ind.	Indianapolis.....10 a.m.,	Sept. 23..	Paving Roanoke street	B. J. T. Jeup, City Engr.
O.	Bowling Green.....noon,	Sept. 23..	Curbing and reconstructing 2,000 ft. of street.....	J. E. Baird, Service Director.
W. Va.	Charleston.....11 a.m.,	Sept. 23..	Improving roads, \$155,000 available	P. J. Walsh, Engr. & Gen.Supt.
N. J.	Trenton.....	Sept. 23..	Furnishing and applying 10,000 gallons of tar.....	E. A. Stevens, State Rd. Comr.
Ill.	Petersburg.....	Sept. 23..	Brick or concrete pavement.....	Goodell & Millard, Engineers, Beardstown, Ill.
O.	Marion.....noon,	Sept. 23..	Repairing and resurfacing Agosta Pike.....	County Surveyor.
S. D.	Huron.....1 p.m.,	Sept. 25..	3,100 sq. yds. concrete alleys, 12,000 sq. yds. concrete, bitulithic or asph. pav't, and 5,000 ft. concr. curb.....	J. B. Sullivan, City Engineer.
Minn.	Anoka.....8 p.m.,	Sept. 25..	Sidewalks, curbs and gutters.....	Henry Lee, City Clerk.
Minn.	St. Peter.....2 p.m.,	Sept. 25..	Grading, graveling and installing culverts.....	W. H. Holz, Co. Auditor.
Minn.	St. Paul.....10:30 a.m.,	Sept. 25..	Concrete paving	H. W. Austin, Purch. Agent.
N. Y.	New York.....2 p.m.,	Sept. 25..	Laying sidewalk, paving with sheet asphalt, wood block and granite block	Comr. of Pub. Works, Bur. of Highways.
N. J.	East Orange.....8 p.m.,	Sept. 25..	Constructing artificial stone walks.....	L. E. Rowley, City Clerk.
N. Y.	New York.....2 p.m.,	Sept. 25..	Repaving approaches to City Island Bridge.....	F. J. H. Kracke, Comr. of Plant & Structure.
O.	Waterville.....noon,	Sept. 25..	Improving two streets	C. J. Roach, Village Clerk.
Fla.	Fort Lauderdale.....	Sept. 25..	Six miles hard surface rd. and 75,000 cu. yds. earth work.....	H. C. Davis, Engr.
Ind.	Indianapolis.....10 a.m.,	Sept. 25..	Paving Kentucky Street	B. J. T. Jeup, City Engineer.
Cal.	Los Angeles.....2 p.m.,	Sept. 25..	Improving streets	H. J. Lelande, County Clk.
Ind.	Gary.....	Sept. 25..	4,100 sq. yds. of pavement, 4,820 ft. curbs, grading and sewers; cost, \$11,300.....	W. P. Cottingham, Assistant City Engineer.
O.	Bexley.....	Sept. 25..	Brick and bituminous pavement between car tracks.....	John Scott, County Clerk, Co- lumbus, O.
Tex.	San Antonio.....4 p.m.,	Sept. 25..	Buying city asphalt plant.....	Fred Fries, City Clerk.
Wash.	Seattle.....	Sept. 25..	Grading and graveling road, cost \$20,000.....	A. P. Denton, Co. Engineer
Ind.	Lebanon.....	Sept. 25..	7 blocks brick pavement, curb, etc.....	Walter Whitecotton, Engr.
O.	Columbus.....2 p.m.,	Sept. 25..	Brick and bituminous roadway between car tracks.....	John Scott, Clerk, Co. Cmr.
N. D.	Stanley.....2 p.m.,	Sept. 25..	Filling and grading.....	H. P. Duggan, County Auditor.
Minn.	Roseau.....7:30 p.m.,	Sept. 25..	Grading, turnpiking and installing culverts.....	R. J. Knutson, Village Clerk.
O.	Dillonvale.....	Sept. 26..	Paving two streets.....	M. Campfield, Council Clerk.
La.	New Orleans.....	Sept. 26..	39,000 sq. yds. hard surface pavement.....	W. J. Hardee, City Engr.
N. J.	Belmar.....8 p.m.,	Sept. 26..	15,150 sq. yds. concrete pavement.....	Clyde Potts, Engineer, 30 Church St., N. Y. City.
O.	Ottawa.....1 p.m.,	Sept. 26..	Furnishing stone (3,000 cu. yds.) rolling and flushing, and 11,500 sq. yds. glutrin treatment.....	J. S. Cartwright, Engr.
Ill.	Freeport.....	Sept. 26..	Macadam paving on three streets.....	C. S. Hepner, Engr.
Ind.	South Bend.....10 a.m.,	Sept. 26..	Grading, paving, graveling and curbing.....	Board of Public Works.
O.	Salem.....	Sept. 26..	Paving three streets with brick.....	Service Director.
Md.	Baltimore.....noon,	Sept. 26..	5 miles concrete or macadam oil-bound road.....	C. H. Wilson, Secy. State Rds. Comn.
N. J.	Linden.....8 p.m.,	Sept. 26..	Resurfacing with stone and Tarvia.....	Priestley & Jahn, Engineers.
N. Y.	New York.....10:30 a.m.,	Sept. 26..	7,020 sq. yds. sheet asphalt and sidewalks.....	Douglas Mathewson, Pres. Boro Bronx.
Minn.	Albert Lea.....	Sept. 26..	Constructing concrete curb, 2,000 ft.....	C. J. Dudley, City Clerk.
N. J.	Ridgefield Park.....	Sept. 26..	Improving two streets	M. B. Starker, Village Clerk
N. Y.	Buffalo.....noon,	Sept. 26..	Repairing park roads	J. F. Malone, Comr. of Parks and Buildings.
Ariz.	Tucson.....10 a.m.,	Sept. 26..	Improving 17.8 miles road	Board of Supervisors.
Neb.	Blair.....noon,	Sept. 26..	Constructing road	Ole Anderson, County Clerk.
Ky.	Louisville.....	Sept. 27..	Paving alleys; cost, \$13,900.....	Board of Public Works.
Ind.	Indianapolis.....10 a.m.,	Sept. 27..	Paving several streets	B. J. T. Jeup, City Engineer.
Md.	Takoma Park.....8 p.m.,	Sept. 27..	5,000 sq. yds. concrete road, 4,500 ft. concrete curb and 400 sq. yds. concrete walk.....	Ben Davis, Town Clerk
N. J.	Irvington.....8 p.m.,	Sept. 27..	3,570 sq. yds. concr. pavement and stone curb.....	I. J. Casey, Jr., Town Engr.
Md.	Baltimore.....11 a.m.,	Sept. 27..	33,040 sq. yds. sheet asphalt, 3,455 yds. brick and 12,500 sq. yds. granite block.....	R. K. Compton, Paving Com- mission Engineer.
N. J.	Passaic.....2 p.m.,	Sept. 27..	Improving Paterson-Hamburg Turnpike.....	County Engineer, Court H'se.
Ind.	Logansport.....10 a.m.,	Sept. 27..	Furnishing gravel and crushed stone.....	A. P. Flynn, Co. Aud.
La.	Lake Charles.....8 p.m.,	Sept. 28..	Gravel tarvia pavement; concrete sidewalks.....	E. L. Gorham, Comr. of Streets & Parks.
O.	Rudolph.....2 p.m.,	Sept. 28..	Constructing macadam road.....	Township Clerk, Liberty Twp.
N. J.	Newark.....3:30 p.m.,	Sept. 28..	Paving with bitulithic.....	M. R. Sherrerd, Chief Engr.
O.	Columbus.....	Sept. 28..	44 miles State highway construction.....	Clinton Cowen, St. Hwy. Comr.
N. Y.	New York.....2 p.m.,	Sept. 28..	Repaving approaches to Williamsburg Bridge.....	F. J. H. Kracke, Comr. of Plant & Structure.
N. Y.	New York.....3 p.m.,	Sept. 28..	Concrete walk and macadam road in parks.....	Park Board, Dept. of Parks.
O.	Lebanon.....2 p.m.,	Sept. 28..	Grading and paving.....	Roy Miller, Engr., Court H'se.
N. C.	High Point.....	Sept. 28..	100,000 to 140,000 sq. yds. first class pavement.....	Anderson & Christie, Engrs., Charlotte, N. C.
Pa.	Philadelphia.....	Sept. 28..	Asph., gran., brick and mac. pav.; cost, \$148,100.....	Wm. H. Connell, Chief, Bur. Highways.
W. Va.	Charleston.....noon,	Sept. 28..	Grading, curbing and paving on 12 streets.....	J. M. Clark, City Engineer.
O.	Cleveland.....noon,	Sept. 28..	Grading, paving and improving	Park Engineers, City Hall.
Ind.	Marion.....	Sept. 29..	Constructing cement sidewalks	Frank Heck, Clerk, Bd. Pub- lic Works.
N. Y.	Buffalo.....11 a.m.,	Sept. 29..	Paving and repaving several streets.....	A. W. Kreinheder, Commis- sioner of Public Works.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind.	Rochester	2 p.m., Sept.	29.. Constructing gravel road.....	E. A. Smith, County Auditor.
O.	Columbus	noon, Sept.	29.. 2,600 sq. yds. macadam, grading, etc.....	John Scott, Clk. Co. Comrs.
La.	New Orleans	Sept.	29.. 61,250 sq. yds. hard surface pavement.....	W. J. Hardee, City Engr.
Miss.	Carthage	Oct.	1.. 20 miles sand clay road, cost \$25,000.....	J. A. Walker, Commissioner
Fla.	Jacksonville	4.30 p.m., Oct.	2.. 2,000 sq. yds. brick and 3,850 sq. yds. asphaltic concrete pavement.....	L. D. Smoot, Comr. of P. Wks.
Ind.	Jeffersonville	10 a.m., Oct.	2.. Constructing limestone road.....	G. W. Stoner, Co. Aud.
Ind.	Fowler	1 p.m., Oct.	2.. Constructing two roads.....	Warren Mankey, Co. Aud.
Ind.	Versailles	1 p.m., Oct.	2.. Constructing stone road.....	J. L. Lochard, Co. Aud.
Ind.	Brookville	1 p.m., Oct.	2.. Constructing 15,400 ft. of road.....	C. G. Reifel, Co. Aud.
N. Y.	Niagara Falls	10 a.m., Oct.	2.. Grade crossing elimination.....	City Manager Carr.
W. Va.	Charleston	Oct.	2.. 35,000 sq. ft. paving.....	City Manager.
Fla.	Jacksonville	Oct.	2.. 4,000 cu. yds. shell for road building.....	Clerk County Commissioners.
Miss.	Granada	Oct.	2.. 50 miles sand-clay road, \$100,000 available.....	Snowden & Hauser, Engrs., Jackson, Miss.
N. D.	Linton	Oct.	2.. Grading.....	J. R. Snyder, County Auditor.
Ind.	Rockville	11 a.m., Oct.	3.. Constructing gravel road.....	Chas. Davis, Co. Auditor.
Ind.	Vincennes	2 p.m., Oct.	3.. Constructing 27,000 ft. gravel road.....	J. I. Muentzer, Co. Aud.
Ind.	Martinsville	1:30 p.m., Oct.	3.. Constructing gravel roads.....	Sam Watson, Co. Auditor.
Ind.	Bloomfield	2 p.m., Oct.	3.. Constructing macadam roads.....	G. E. Kidd, Co. Auditor.
Ind.	Corydon	2 p.m., Oct.	3.. Gravel or macadam road.....	J. L. O'Bannon, Co. Aud.
O.	Columbus	noon, Oct.	3.. Paving with asphalt and brick.....	G. A. Borden, Dir. Pub. Serv.
S. D.	Yankton	2 p.m., Oct.	3.. Grading road.....	W. O. Nelson, Co. Aud.
Ind.	Lawrenceburg	noon, Oct.	3.. Constructing road.....	H. B. Lutherbeck, Co. Aud.
Ind.	Kokomo	10 a.m., Oct.	3.. Constructing stone road 3,958 ft. long.....	William L. Benson, Howard County Auditor.
Ind.	Washington	2 p.m., Oct.	3.. Gravel road construction.....	J. T. Clark, Daviess Co. Aud.
Ind.	Bedford	1 p.m., Oct.	3.. Several miles gravel or macadam road.....	E. W. Edwards, Lawrence County Auditor.
Ind.	Monticello	10 a.m., Oct.	3.. Constructing stone road.....	A. G. Fisher, Co. Aud.
Ind.	Logansport	Oct.	3.. Constructing stone road.....	A. P. Flynn, Co. Aud.
Minn.	Luverne	2 p.m., Oct.	3.. 20 miles of graveling on county roads 2, 4 and 5.....	Olaf Skyberg, Co. Aud.
Ind.	Rensselaer	2 p.m., Oct.	3.. Constructing 2 stone roads.....	J. P. Hammond, Co. Aud.
Ind.	Winamac	Oct.	3.. Constructing gravel road.....	W. E. Munchenberg Co. Aud.
Ind.	Elkhart	2 p.m., Oct.	3.. Constructing road.....	A. R. Bemenderfer, Co. Aud.
Cal.	Bakersfield	Oct.	3.. 10 miles stone road.....	Board of Co. Supervisors
Ind.	Frankfort	2 p.m., Oct.	4.. 1 mile of gravel road.....	Edward Spray, Co. Aud.
N. J.	Freehold	11 a.m., Oct.	4.. Gravel road construction.....	G. B. Cooper, County Engineer, 60 Broad St., Red Bank, N. J.
Ind.	Shelbyville	10 a.m., Oct.	4.. Gravel road construction.....	S. W. Fagel, Shelby Co. Aud.
Miss.	Jackson	noon, Oct.	4.. Road surfacing.....	W. W. Downing, Clerk County Supervisors.
Kan.	Columbus	noon, Oct.	4.. 16,952 sq. yds. brick, asphalt, asphaltic concrete or National pavement and 4,762 ft. curb and gutter.....	F. H. Hawkins, City Clerk.
Ind.	Huntington	2 p.m., Oct.	4.. Improving highways.....	O. E. Eviston, County Auditor.
Cal.	Santa Ana	Oct.	4.. Concrete pavement, county furnishes materials.....	W. B. Williams, Clk. Co. Supv.
Ind.	Columbia City	1 p.m., Oct.	4.. Constructing county road.....	T. A. McLaughlin, Co. Aud.
Ind.	LaPorte	10 a.m., Oct.	5.. Constructing several roads.....	F. A. Hausheer, Co. Aud.
O.	Newark	Oct.	5.. Paving two streets with brick.....	C. H. Wells, City Engr.
Ind.	Hartford City	Oct.	5.. Improving streets; cost, \$4,000.....	City Clerk.
Ind.	Indianapolis	10 a.m., Oct.	6.. Gravel road construction.....	L. K. Fesler, Marion Co. Aud.
Ore.	Portland	Dec.	6.. Regrading for railroad work; cost, \$600,000.....	City Engineer.
O.	Sebring	Oct.	9.. Brick pavement and stone curb, cost \$53,000.....	H. C. Stratton, Engr.
O.	Cleveland Heights	Oct.	16.. Paving streets.....	F. A. Pease Engr. Co., Marshall Bldg., Cleveland, O.
Minn.	Crookston	2 p.m., Oct.	10.. Grading and improving road.....	H. J. Welte, Co. Aud.
N. J.	Hammononton	8 p.m., Oct.	11.. 15,911 sq. yds. reinforced concrete pavement.....	J. C. Remington, Jr., Engr., 601 Market St., Camden, N.J.
Que.	LaSalle	5 p.m., Oct.	13.. Constructing macadam and concrete roads.....	Belque and Charton, Engrs., Transportation Bldg., Montreal.
Ind.	Liberty	1 p.m., Oct.	14.. Constructing gravel road.....	G. W. Wray, Co. Auditor.
Ind.	Brazil	10.30 a.m., Oct.	25.. Constructing county line stone and gravel road.....	W. O. Graeser, Co. Aud.
SEWERAGE.				
O.	Bowling Green	noon, Sept.	27.. Constructing sanitary sewer.....	J. E. Baird, Service Director.
La.	Sloux City	10 a.m., Sept.	23.. Constructing sanitary sewers.....	Chas. Kloster, City Clerk.
O.	Urbana	Sept.	23.. Sewerage system and disposal plant at school.....	J. W. Evans, Pres. Bd. Educ.
Wis.	Portage	2 p.m., Sept.	25.. 1,800 lin. ft. 24-in. and 700 lin. ft. 12-in. vitrified pipe storm sewer.....	H. V. Tennant, Engineer.
Minn.	St. Paul	10.30 a.m., Sept.	25.. 12,977 lin. ft. 3-in. hexagonal vitrified drain tile; 14,400 sewer brick.....	H. W. Austin, Purch. Agent.
O.	Canal Fulton	noon, Sept.	25.. Constructing sanitary sewers.....	Thos. Jones, Village Clerk.
N. J.	East Orange	8 p.m., Sept.	25.. Constructing several sewers 12 to 30-in.....	L. E. Rowley, City Clerk.
Wis.	New Lisbon	8 p.m., Sept.	25.. Constructing sewage disposal tank.....	W. G. Kirchoffer, Engr., c/o H. J. Gibson, City Clerk.
Ill.	Oak Park	Sept.	25.. Three miles 9 to 20-in. vitrified sewers.....	W. F. Sargent, Engr.
Ill.	Calro	Sept.	25.. Repairing sewers.....	Geo. Dewey, Engineer.
Ind.	Gary	Sept.	25.. 1,550 ft. 6-in. connections and paving.....	W. P. Cottingham, Assistant City Engineer.
Ill.	Harvel	Sept.	25.. 10,000 feet of tile drain.....	H. J. Warnsing, Drain Comr.
Ill.	Chicago	Sept.	25.. Sewers in several streets.....	E. J. Glackin, Secy. Bd. Local Improvements.
la.	Emmetsburg	1 p.m., Sept.	26.. Constructing 12,650 ft. 10 to 36-in. storm sewer.....	Marr, Green & Co., Engineers, 17 N. La Salle St., Chic. Ill.
N. D.	Mohall	8:30 p.m., Sept.	26.. Constructing sewer system.....	T. Syverson, City Auditor.
Ohio	Ottawa	1 p.m., Sept.	26.. 7,950 ft. 4-in. tile.....	J. S. Cartwright, Engr.
N. Y.	New York	Noon, Sept.	26.. Tunnel relief sewer.....	Comr. of Public Works, Bureau of Sewers, New York.
N. J.	Linden	8 p.m., Sept.	26.. Lateral connecting sewer.....	Priestley & Jahn, Engineers.
N. Y.	New York	2 p.m., Sept.	26.. Constructing sewers and receiving basins.....	Comr. of Pub. Works, Bureau of Sewers.
Pa.	West View	1 p.m., Sept.	26.. 8-in. sanitary sewer.....	C. A. McClain, Clerk.
O.	Ottawa	Sept.	26.. 8,000 ft. 4-in. sewers.....	C. F. Heckman, Village Clk.
N. J.	Irvington	8 p.m., Sept.	27.. Curbing and paving and making sewer connections.....	I. J. Casey, Jr., Town Engr.
Mass.	Boston	noon, Sept.	28.. 235 ft. 66x82-in. concrete sewer.....	Boston Transit Commission, 15 Beacon St., Boston.
Kan.	Garden City	Sept.	28.. Sanitary sewer system; cost, \$40,000.....	J. F. Crocker, City Clerk.
S. D.	Madison	8 p.m., Sept.	28.. Sewer and water connections.....	William Rae, City Aud.
la.	Nevada	Sept.	28.. Constructing drains, cost \$36,500.....	F. E. King, County Auditor.
O.	Cleveland	noon, Sept.	28.. Constructing sewers.....	Comr. of Engineering.
O.	Grover	noon, Sept.	29.. Constructing sanitary sewer.....	Seth Williams, Clerk, Board Education.
Ill.	Chicago	Sept.	29.. Sewers in several streets.....	E. J. Glackin, Secy. Bd. Local Improvements.
Minn.	Owatonna	2 p.m., Sept.	30.. 16,000 ft. 12 to 24-in. tile drains.....	G. A. Ralph, Engr., 16 Fulton Block, St. Paul, Minn.
O.	Cuyahoga Falls	Oct.	1.. 8 to 24-in. tile sewers.....	City Clerk
O.	Port Clinton	Oct.	3.. Sewer construction, cost \$9,800.....	K. E. Weddkind, City Engr.
O.	Columbus	noon, Oct.	3.. Constructing sewer in Chase Avenue.....	G. A. Borden, Dir. Pub. Serv.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Minn.	Benson	10 a.m., Oct.	3..Tile drainage ditches; cost, \$6,000.....	R. R. Johnson, Engineer.
Minn.	St. James	2 p.m., Oct.	6..Constructing two large tile drainage ditches.....	J. C. Jensen, County Auditor.
Minn.	Springfield	7:30 p.m., Oct.	9..360 ft. 8-in. sewer.....	E. J. Fernholz, Recorder.
N. J.	East Orange	Oct.	9..Constructing storm water drain.....	W. D. Willgerod, City Engr.
O.	Cleveland Heights	Oct.	16..Sewers in two streets.....	F. A. Pease Engr. Co., Marshall Bldg., Cleveland, O.
O.	Port Clinton	Oct.	10..Constructing sewers; cost, \$16,000.....	K. E. Wedikind, City Engr.
Pa.	Bellwood	Oct.	11..Sewerage system and disposal plant.....	Harvey Linton, Engr., 1717 13th St., Altoona, Pa.
Cal.	Hermosa Beach	Oct. 15..	Disposal plant, cost \$27,000.....	C. R. Sumner, City Engr.
WATER SUPPLY.				
Cal.	Sacramento	10 a.m., Sept. 25..	Reinforced concrete pumping station.....	R. E. Thompson, Secy., Carmichael Irrigation District.
N. Y.	Watervliet	2:30 p.m., Sept. 25..	Completing work on water works system.....	City Engineer.
Ariz.	Douglas	7 p.m., Sept. 25..	Oil engine and 750 gal. triplex pump.....	C. H. Foss, Secy. Water Commissioners.
O.	Columbus	Noon, Sept. 25..	40-ton c. i. pipe, 10-ton specials, 200 hydrants.....	G. A. Borden, Pres. Bd. of Pur.
O.	Celina	noon, Sept. 26..	300-h.p. steam engine or engine connected with 200-kw. 3-phase generator.....	Geo. A. Petrie, Trustee Public Affairs.
N. J.	Nutley	8 p.m., Sept. 26..	1,800 ft. 6-in. water main.....	E. N. Smith, Town Engineer.
Ont.	Ottawa	noon, Sept. 27..	Constructing three 40,000-gal. water tanks.....	Chief Engineer, Dept. Rys & Canals.
S. D.	Madison	8 p.m., Sept. 28..	Water and sewer connections.....	William Rae, County Aud.
Wis.	Waupun	2 p.m., Sept. 29..	1,100 ft. 4 to 6-in. c. i. water pipe construction.....	Water & Light Commission.
Idaho	Albion	Oct.	1..Constructing work; cost, \$8,000.....	A. E. Uhl, General Manager.
Id.	Rolfe	Oct.	1..Constructing 25,000-gal. steel tank and repairing tower.....	B. J. Boos, Clerk.
O.	Defiance	Oct.	2..Deep well and water system at the Court House.....	Roger Daoust, Co. Aud.
O.	Columbus	noon, Oct.	3..Water mains in two streets.....	G. A. Borden, Dir. Pub. Serv.
Fla.	Jacksonville	4 p.m., Oct.	4..Constructing 12,000,000-gal. pumping engine.....	Commissioner of Public Wks., Water Department.
N. D.	Fargo	10 a.m., Oct.	4..Mechanical stokers and fuel-saving devices at water-works pumping station.....	A. R. Watkins, City Auditor.
Argentina	Buenos Aires	Oct. 13..	59,000 metric tons c. i. pipe and specials.....	Obras Sanitarias de la Nacion.
Minn.	Kenyon	7:30 p.m., Oct. 13..	Laying 2,100 ft. 4-in. main, hydrants and valves.....	W. C. Fraser, Hackney Bldg., St. Paul, Minn.
O.	Cleveland Heights	Oct. 16..	Laying water mains.....	F. A. Pease Engr. Co., Marshall Bldg., Cleveland, O.
Fla.	Havana	Oct. 23..	Water system and electric light plant.....	City Engineer.
MISCELLANEOUS.				
N. Y.	Watertown	5 p.m., Sept. 25..	Collecting garbage for one year.....	E. W. Clark, City Clerk.
N. Y.	Oswego	Sept. 25..	150-ft. subway and terminal at Normal School at Oswego.....	J. G. Riggs, Principal.
Ind.	Boswell	Sept. 26..	Cleaning and repairing ditch.....	H. E. Simpkins, Twp. Trust.
Que.	La Prairie	4 p.m., Sept. 26..	Improving and completing protection dyke.....	Postmaster.
N. J.	Newark	3:30 p.m., Sept. 27..	20 motorcycles, with speed of 60 miles per hour.....	F. C. Breidenbach, Pres. Bd. Police Comrs.
Ind.	Indianapolis	10 a.m., Sept. 27..	Removing walls and levees and improving Fall creek.....	B. J. T. Jeup, City Engr.
Neb.	Schuyler	Sept. 29..	Constructing drainage ditch.....	W. E. Fletcher, Co. Clerk.
N. Y.	Tompkinsville	Sept. 29..	Furnishing and placing rip rap at Hunt's Point.....	Lighthouse Inspector.
O.	Cleveland	noon, Sept. 29..	Sale of garbage grease.....	Director of Public Service.
Mo.	St. Louis	Sept. 29..	Municipal docks; cost, \$200,000.....	Clerk, Bd. of Public Works.
Minn.	Breckenridge	10 a.m., Sept. 29..	Drainage ditch; cost, \$12,227.....	P. E. Truax, Co. Aud.
Col.	Denver	Oct. 2..	Furnishing drag line excavators.....	U. S. Reclamation Service.
Cal.	San Jose	11 a.m., Oct. 2..	Constructing drainage ditch.....	H. A. Pfister, County Clerk.
N. Y.	Albany	Noon, Oct. 3..	Canal Sections and terminal at Rochester.....	W. W. Wotherspoon, State Supt. P. W.
N. Y.	New York	Oct. 3..	Discharge tunnel at 59th St. Power House.....	Chief Engineer, I. R. T., 165 Broadway.
Ky.	Louisville	noon, Oct. 9..	Metal work for gate operating machinery.....	U. S. Engineer.
Minn.	Crookston	2 p.m., Oct. 10..	Repairing drainage ditch.....	H. J. Welte, Co. Aud.
D. C.	Washington	Oct. 21..	Concrete dry dock at Norfolk Navy Yard.....	Bureau of Yards & Docks, Navy Dept.

STREETS AND ROADS

Athens, Ala.—County Commissioners have appropriated \$8,000 for extending Jackson Highway from Athens to Decatur.

Oseola, Ark.—State Highway Engineer Carter of Little Rock has prepared plans for 14 miles of concrete road between Blytheville and Gasnell.

Phoenix, Ariz.—Petitions for paving with bitulithic and tarvia macadam have been presented to Council.

Chino, Cal.—County will pave Central Ave. Money already appropriated.

Claremont, Cal.—Paving of Alexander Ave. from Pomona with concrete at cost of \$96,000 is contemplated.

East Sacramento, Cal.—Campaign has been inaugurated for success of road bond issue.

Hilt, Cal.—Siskiyou County has petitioned for a road to connect with State highway.

Jackson, Cal.—County has appropriated \$12,000 for highway improvements.

Los Angeles, Cal.—City will improve several streets, mostly with asphaltic pavement, and construct grades.

Los Angeles, Cal.—Engineer has been instructed to prepare map for the extension of Griffen Ave.

Pomona, Cal.—City may oil Brea Canyon Rd. at cost of about \$6,000.

Sacramento, Cal.—A special election will be held Oct. 3 for voting on issuance of bonds amounting to \$1,750,000 for construction of main highways in Sacramento county, which include the following roads: Marysville Rd., 6.11

miles; "H" St. Rd., 12.38 miles; Fair Oaks-Greenback Lane Rd., 2.47 miles; Greenback Lane Rd., 7.20 miles; Plymouth Rd., 14.78 miles; Florin-Perkins Rd., 3.66 miles; Elk Grove-Franklin Rd., 3.33 miles; Elk Grove-Sheldon Rd., 4.56 miles; Lower Stockton Rd., 8.62 miles; Galt-New Hope Rd., 7.40 miles; Sacramento-Freepoint Rd., 5.43 miles; River Rd., 34.10 miles; Pocket Rd., 3.38 miles; Florin-Upper Stockton Rd., 1.75 miles.

Boulder, Colo.—Ordinances have been passed providing for construction of sidewalks.

Boulder, Colo.—See "Water Supply."

Washington, D. C. (Bureau of Foreign and Domestic Commerce, Department of Commerce).—A firm in Switzerland wishes to receive offers for excavating and other machinery to be used in construction work. Correspondence in French or German. (Refer to "Opportunity Number" 22418).

Leesburg, Fla.—Bonds amounting to \$65,000 will be issued for a sand asphalt highway connecting Howey with Leesburg on the west and with Tavares on the northwest.

Mayo, Fla.—Lafayette county will soon hold bond election to vote on issuance of bonds amounting to \$600,000 for a chain of good roads.

Miami, Fla.—City is planning to pave several miles of streets with asphaltic concrete and to oil macadam streets.

Tampa, Fla.—Authority has been given City Engineer to purchase carload of brick for repairing streets.

Atlanta, Ga.—County may pave all Piedmont Park roads.

Mattoon, Ill.—Following is a list of the streets along which the new sidewalks

are to be placed: On South 31st St., between Marshall Ave. and Illinois Central right of way, west side of street, 200 lin. ft., 4-ft. walk; on Prairie Ave., between 19th and 20th Sts., south side of street, 200 lin. ft., 5-ft. walk; on Washington Ave., between 11th and 12th Sts., south side of street, 140 lin. ft., 5-ft. walk; on Piatt Ave., between Sixth and Seventh Sts., north side of street, 140 lin. ft., 5-ft. walk; on North 11th St., between Washington and Hayes Aves., west side of street, 150 ft., 4-ft. walk; on DeWitt Ave., between 12th and 13th Sts., south side of street, 150 lin. ft., 5-ft. walk.

Albion, Ind.—Sept. 15, 1916, at 10 a. m., by Treasurer of Noble county, for sale \$2,700 and \$14,200 highway improvement bonds, 4½ per cent., ten years. Roy K. Riddle, Treasurer.

Bluffton, Ind.—County will sell Sept. 20 \$7,680 highway improvement bonds.

Brazil, Ind.—Sept. 30, 1916, at 10:30 a. m., by Treasurer of Clay county, for sale \$15,400 and \$13,400 highway improvement bonds, 4½ per cent., ten years. Thomas W. Swinehart, Treasurer.

Cannelton, Ind.—No bids received for road work. M. C. Conaway, County Auditor.

Crown Point Ind., Sept. 23, 1916, at 10 a. m., by treasurer of Lake county, for sale of \$5,000 highway improvement bonds, 4½ per cent., 10 years. M. J. Brown, treasurer.

Fort Wayne, Ind.—Board of public works have received bids for 15 sidewalk improvement jobs.

Goshen, Ind.—Sept. 25, 1916, at 10 p. m., by Treasurer of Elkhart county, for

In This Issue: Contract News

Roads and Streets.

68 new bids asked
187 proposed work items

Sewerage:

33 new bids asked
64 proposed work items

Water Supply:

12 new bids asked
58 proposed work items

471 advance news items, including "Miscellaneous"—all new and reliable, for the municipal works contractor. More municipal contract news than any other paper.

Municipal Journal Leads in Service to Contractors

struction. It is the intention of the city to surface practically all of the streets as rapidly as possible in order to meet good roads being built at both ends of the parish.

New Orleans, La.—Over one million dollars is to be spent in paving; bids have been received for seven streets.

West Monroe, La.—See Water Supply.

Lunenburg, Mass.—Old bridge on New Townsend road will be replaced with a cement structure.

Northampton, Mass.—Amiesite paving on Main St. is to be repaired.

Pittsfield, Mass.—The state has the sum of \$4,000 to expend on state roads in New Ashford.

Springfield, Mass.—City finance committee has voted \$5,000 for sidewalk work.

Lansing, Mich.—City will issue bonds in sum of \$20,387.35 for paving streets.

Menominee, Mich.—The petition to pave Farmer St. from Grand Ave. to Ludington Ave. has been referred to the appropriation committee and aldermen. The petition to pave Stephenson Ave. from Catherine St. to Broadway has been referred to the appropriation committee and aldermen. The petition to pave Carpenter St. from Grand Ave. to Ogden Ave. has been referred to the appropriation committee and aldermen. The committee on appropriation and street committee, to whom was referred the matter of paving Michigan Ave., Carpenter St. from Ogden Ave. to Stephenson Ave., and Jenkins St., respectively, report that they have had same under consideration and recommend that money be appropriated for the paving. The committee also recommends that nothing be done to Bridge St.

Duluth, Minn.—The city is to lay a new 22-ft. stretch of concrete pavement from gutter lines on 27th Ave. west from Michigan to Fifth St. Work will be done by day labor.

Minneapolis, Minn.—Council has ordered paving of four streets.

Ogema, Minn.—Sealed bids will be received until 2 o'clock p. m., Oct. 7, for the purchase of road and bridge bonds amounting to \$7,000. S. O. Pike, town clerk, Danbury, Wis.

Yazoo City, Miss.—County will straighten and improve with gravel and binder several roads.

Cape Girardeau, Mo.—A small stretch of road between Ancil and Farnfield is in need of repair, and a concrete bridge is also necessary. It is estimated work will cost \$2,000.

Kansas City, Mo.—Several streets are to be paved.

Kansas City, Mo.—The contract with the Missouri Sidewalk & Construction Co. for walk south side 28th, Chelsea to Payton road, has been annulled.

Nevada, Mo.—Vernon County will raise funds for Jefferson highway.

Omaha, Neb.—City Planning Commission will recommend to City Council the improvement of 23rd St. from A St. north to Deer Park Blvd., a distance of 660 ft. Present crooked dirt roadway will be

replaced by a paved street, and sidewalks will be ordered.

Atlantic City, N. J.—Freeholders have voted to pave road from Absecon to county line.

Asbury Park, N. J.—Widening and repairing of Main St., Ocean Ave. and Lake Ave. proposed.

Bayonne, N. J.—Property owners have petitioned for asphalt pavement on West 39th St. Petition granted.

Camden, N. J.—Bettewood Rd. will be resurfaced by county and Cedarbrook and Lindenwood Rds. improved.

Elizabeth, N. J.—City has issued \$42,000 street improvement bonds for asphalt and granite block paving.

Linden, N. J.—Council has adopted recommendations for improving four streets.

Montclair, N. J.—Valley Rd. will be repaved.

Newark, N. J.—Resolution of intention passed for paving High St. with granite and wood block and Mopes Ave. with asphalt.

Newark, N. J.—Steps have been taken by the Kearny town council toward paving of John St. at its intersection of Woodland Ave.

Newton, N. J.—Money to be expended by the town committee for the coming year is as follows: Concrete sidewalks and curbing, \$1,000; streets, beside license money, \$3,500; street lighting, \$8,000; fire department, \$1,000; oiling streets, \$1,500; High St. sewer extension, \$1,600; Morningside sewer extension, \$3,000; concrete street in Spring St., \$12,000.

Passaic, N. J.—City will grade and install curb and gutter in Bowes Place.

Passaic, N. J.—City Commissioners have passed ordinance for paving Passaic Ave. with asphalt on concrete base.

South Orange, N. J.—Council has passed ordinance for laying portland cement curb and gutter on Mountain Ave.

Albany, N. Y.—Several streets are in need of improvement.

Albany, N. Y.—The board of supervisors has approved the plans of the state highway department for the construction of the Coeymans Hollow-Ravena Highway at a cost of \$47,000. It will be brick with a roadway of 20 ft. and curbing, except one-third of a mile on a grade, where granite blocks will be used.

Albany, N. Y.—The clerk has been directed to readvertise for bids for the improvement of Ninth St. for which bids were rejected some time ago as being excessive.

Corning, N. Y.—The construction of 17.10 miles of new macadam county highway at a cost of \$262,120 has been authorized by the Steuben supervisors. The roads ordered constructed were: Frattsburg-Kanona, 4.97 miles; Corning-Hornby, 6 miles; Wavland-Springwater, 2.83 miles; Caton-Seeler creek, 4 miles.

Fulton, N. Y.—Council has voted \$7,000 for paving streets.

Lockport, N. Y.—State Highway Dept. has announced it will advertise for bids for the repair of Akron macadam road from city line of Lockport southeast to Akron.

Peekskill, N. Y.—Croton-Peekskill Rd. is to be constructed.

Rochester, N. Y.—First ordinances have been adopted as follows: Meriden St. walks, \$300; Albion St. grading, walks and sewers, \$900; Portland Ave. pavement, \$32,000; additional lighting in Jones St. from Commercial St. to Brown St., \$476; Goodman St. asphalt pavement from Park Ave. to Monroe Ave., \$25,300; Highland Ave. sanitary sewer, \$4,500; extension and opening of Arbutus St., \$1,000; additional lighting in Ormond St., \$900. Final ordinances have been adopted as follows: Troup St. asphalt resurfacing from Reynolds St. to Caledonia Ave., \$1,186.25; additional lighting in Mortimer St. from Clinton Ave. North to North Water St., \$347.50; removal of iron poles in Mortimer St., \$120; removal of iron poles in Pierrepont St. from Augustine St. to Driving Park Ave., \$100; Arnold Park care and embellishment, \$550; Rosedale St. asphalt block pavement from Pinacle Rd. to Monroe Ave., \$18,000; Pardee St. pavement from Joseph Ave. to Remington St., \$8,250; removal of four iron poles in Cutler St. between Jewel St. and Conkey Ave., \$300; Congress Ave. grading and walks from Hazel St. to Post Ave., \$2,300; Wisconsin St. grading, walks and sewer, from Main St. to Atlantic Ave., \$11,500; Indiana St. grading, walks and sewer, from Main St. to

sale \$23,000 highway improvement bonds, 4½ per cent., ten years. W. H. Winship, Treasurer.

Indianapolis, Ind.—Sept. 25, 1916, at 10 a. m., by Treasurer of Marion county, for sale, \$25,000 highway improvement bonds, 4½ per cent., ten years. Ed. G. Sourbier, Treasurer.

Jeffersonville, Ind.—Gavin L. Payne & Co. have purchased free gravel bonds amounting to \$9,000.

Knox, Ind.—Sept. 25, 1916, at 12 m., by Treasurer of Starke county, for sale \$13,500 highway improvement bonds, 4½ per cent., ten years. Henry Luken, Treasurer.

LaPorte, Ind.—County will sell Sept. 20 \$45,000 highway improvement bonds.

Martinsville, Ind.—Oct. 9, 1916, at 12 m., by Treasurer of Morgan county, for sale \$8,100 highway improvement bonds, 4½ per cent., ten years. Walter Rosenbalm, Treasurer.

Petersburg, Ind.—Sept. 26, 1916, at 10 a. m., by treasurer of Pike county, for sale at public auction \$28,800 highway improvement bonds, 4 per cent., 20 years. C. D. Henke, Treasurer.

Petersburg, Ind.—Marion township will vote on rock roads Oct. 10.

Rockville, Ind.—Oct. 4, 1916, at 2 p. m., by treasurer of Parke county, for sale \$4,440 and \$7,675 highway improvement bonds, 4½ per cent., ten years. J. H. Rush, Treasurer.

South Bend, Ind.—Sept. 27, 1916, at 10 a. m., by treasurer of St. Joseph county, for sale \$3,700 highway improvement bonds, at 4½ per cent., ten years. F. W. Martin, Treasurer.

South Bend, Ind.—Contract on resurfacing 3,000 sq. yds. asphalt on brick or concrete, has not been let. Will be re-advertised.

Veipen, Ind.—Oct. 7, 1916, at 1 p. m., by treasurer of Marion township, Pike county, for sale \$7,000 highway improvement bonds, 4½ per cent., 7 years. W. P. Risley, trustee.

Washington, Ind.—Oct. 2, 1916, at 2 p. m., by treasurer of Daviess county, for sale \$3,700 highway improvement bonds, 4½ per cent., 10 years. Elmer Buzan, treasurer.

Winchester, Ind.—Sept. 23, 1916, at 11 a. m., by Treasurer of Randolph county, for sale \$77,900, nine issues, highway improvement bonds, 4½ per cent., ten years. Elijah Puckett, Treasurer.

Des Moines, Ia.—Ingersoll Ave. is to be paved between 17th and 28th St. early in the spring.

Sioux City, Ia.—The contracts with the MacVicar & Borrowes Paving Co., Des Moines, have been cancelled and city will repair Nebraska, Douglas and Pierce Sts.

Waterloo, Ia.—A new highway will be constructed leading to the Cedar Falls fair grounds and State Teachers' College.

Waterloo, Ia.—County supervisors have ordered construction of gravel road south from Jesup.

Junction City, Kan.—Oiling several miles of county roads is being considered by County Commissioners.

Lawrence, Kan.—Ordinance has been passed ordering grading, curbing and paving of Elm St. from 2nd St. N. to 7th St. N.

Lawrence, Kan.—Improvement bonds amounting to \$39,835.73 will be issued.

Lawrence, Kan.—All bids on construction of the roadway in Oak Hill Cemetery have been rejected as too high and will be readvertised.

Olathe, Kan.—Johnson County will oil 45 miles of road. Oil is purchased already.

Hickman, Ky.—City Council is contemplating a \$20,000 or \$25,000 bond issue for street improvements and drainage. This will probably be decided at next meeting of Council.

Louisville, Ky.—Samuel T. Mann, City Engineer, has been directed to prepare estimate of cost of proposed macadam improvement of Culbertson Ave. from E. 4th St. to E. 10th St.; also to make an estimate of cost of material for repair of Beeler and Chartres Sts. from E. 8th to Vincennes.

Louisville, Ky.—Ordinance has been passed for improving streets and alleys and constructing sidewalks.

Hunkle, La.—Bonds amounting to \$100,000 will be issued for construction of good roads.

Lake Charles, La.—Taxpayers have authorized a new \$900,000 bond issue for good roads.

Morgan City, La.—The city council has instructed City Engineer Thorgson to get bids on material for street con-

Atlantic Ave., \$11,500; Illinois St. grading, walks and sewer, from Main St. to Atlantic Ave., \$11,500; Morton St. grading and walks from Clifford Ave. to Springfield St., \$1,000; Electric Ave. asphalt pavement, from city line to Dewey Ave., \$32,000; the acquisition of lands for a ditch in Augustine St., Marigold St. asphalt pavement, \$3,650.

Yonkers, N. Y.—Council has ordered construction of sidewalks on several streets.

Yonkers, N. Y.—The laying out and opening of Sherman Ave. from Murray Ave. to east line of Gunther Park; Maple St. from Walnut St. to Van Cortlandt Park Ave., and the Oak St. extension from the south end of the present street to the north line of Green Farm, has been approved by the board of estimate and apportionment.

Greensboro, N. C.—Survey will soon be made for a new street from North Park Drive to Percy St.

Bowling Green, O.—A number of property owners have been ordered to put down new 4-ft. walks of stone or cement.

Cincinnati, O.—An ordinance has been passed for determining to proceed with the improvement of Arch St. from Broadway to Lawrence St. by grading, setting granite curbs, paving roadway with asphalt or bitulithic and constructing the necessary drains and inlets and replacing existing 4-in. water main with 6-in. water main.

Cleveland, O.—W. 25th St is to be widened. City has purchased four parcels of land for the purpose.

Ironton, O.—County seeks State aid for 2 miles of road and may issue bonds in sum of \$40,000 to pay for work.

Middletown, O.—City will issue \$6,000 bonds to improve streets.

Middletown, O.—The matter of erecting concrete bridges over the canal at Third St. and Tytus Ave. is under consideration; also the lighting of the new viaduct and improvement of the Dixie Highway through Butler county.

Chickasha, Okla.—County Commissioners have ordered construction of one mile of road. Road bonds are also considered.

Oklahoma City, Okla.—Governor Williams is planning to reconstruct old military road in eastern part of the state. Will try to secure \$50,000 from Federal aid fund and equal amount from counties.

Cresevel, Ore.—Council has ordered paving of A St.

Camp Hill, Pa.—The paving proposition is again under consideration.

Erie, Pa.—Dirt roadways are to be repaired.

Hazleton, Pa.—Diamond Ave. is to have a parkway in the center of the new pavement from Alter to Lincoln St.

Kittanning, Pa.—Walnut St. is to be paved between the river and the P. R. R.

Norristown, Pa.—Plans have been formulated for building paved road from Pottsville to Pennsylvania.

Wilkes-Barre, Pa.—An ordinance has been passed authorizing and directing the grading, curbing and paving of Howard St. and East Broadway, in the borough of Larksville.

Williamsport, Pa.—Council has passed ordinances providing for bond issue of \$60,000 for resurfacing asphalt pavements and constructing storm sewers.

Williamsport, Pa.—Sealed proposals will be received until 10 o'clock a. m., Sept. 25, for the purchase of improvement bonds amounting to \$60,000.

Providence, R. I.—Several streets are to be paved.

Nashville, Tenn.—City may widen 6th Ave.

Nashville, Tenn.—Four counties will vote on issuance of bonds amounting to more than \$1,000,000 for good roads, as follows: Hickman county, \$225,000; Bedford county, \$350,000; Lincoln county, \$450,000, and McMinn county, \$250,000.

Nashville, Tenn.—The city street force will grade, bed and macadamize Ligon Ave. from Meridian St. to North First St. The sum of \$3,800 has been appropriated for the work.

Nashville, Tenn.—The sum of \$3,500 has been appropriated for the grading and macadamizing Jackson St. from Fifth to Eighth Aves., the work to be done by the city street force.

Nashville, Tenn.—City has purchased land to increase the width of Union St. between Capitol Blvd. and Seventh Ave.

Nashville, Tenn.—Commerce St. is to be improved by grading at a cost of about \$5,800.

Waverly, Tenn.—Humphrey County is going to issue bonds amounting to \$250,000 for good roads.

Canadian, Tex.—Business men are discussing plan for opening public highway between Higgins and Canadian. Lipscomb County has voted \$75,000 road bonds and Roberts county \$30,000.

Corpus Christie, Tex.—City has ordered paving of several streets. Bitulithic and asphalt macadam will probably be used.

El Paso, Tex.—City Engineer's estimate of paving 2nd St. from Chihuahua to St. Vrain is fixed at \$30,403.74.

El Paso, Tex.—Fort Bliss road is to be paved.

Fort Worth, Tex.—Washington Ave. from Carlock St. to Jessamine St. is to be paved, and City Secretary has been ordered to advertise for bids.

Fort Worth, Tex.—City will macadamize streets at cost of about \$10,000.

Waxahachie, Tex.—See "Sewerage."

Ogden, Utah.—Washington Ave. may be paved to the city limits.

Provo, Utah.—County is contemplating issue of bonds to build 50 miles of hard surface road.

Salt Lake City, Utah.—More than \$250,000 will be expended on improvement of Lincoln highway.

Vernal, Utah.—County commissioners are considering the issuance of bonds amounting to \$50,000 for good roads, and the building of a road over the mountain to the Wyoming state line.

Winooski, Vt.—City voted to repair three streets with gravel.

Howardsville, Va.—Buckingham county will issue bonds amounting to \$50,000 to be used for construction of improved roads.

Norfolk, Va.—Property owners have presented a petition to Council asking for widening and smooth paving of Boush St.

Norfolk, Va.—A smooth pavement is urged for Brooke Ave.

Portsmouth, Va.—City contemplates curbing and guttering Dinwiddie St. at estimated cost of \$8,000.

Portsmouth, Va.—Engineer Preston recommends that roads should be scarified, reshaped and resurfaced with stone work to be done by Spring. Also recommends that another ten-ton roller be purchased.

Charleston, W. Va.—Pocataligo district of Putnam county voted Saturday bond issue for good road to Kanawha county line.

Centralia, Wash.—See Water Supply.

Ellensburg, Wash.—An appropriation has been asked for building a road beyond Lake Cle. Elum, from the Good Roads Association of Roslyn and Cle Elum.

Spokane, Wash.—City will spend about \$56,000 for grading and improving streets.

Spokane, Wash.—Plans for the regrading of Olive Ave., between the two bridges at a cost of \$30,000 have been placed on file by the city council.

Danbury, Wis.—Town will sell bonds Oct. 7 for \$7,000. Proceeds will be used for road or bridge work.

Racine, Wis.—An ordinance has been passed providing for issuance of improvement bonds amounting to \$40,000.

Racine, Wis.—Clark St. from 14th to 16th, and 15th St. from Racine St. to Junction Ave. are to be sprinkled with oil.

Rhineland, Wis.—County will vote soon on \$300,000 bond issue. Proceeds will be used to build 150 miles of road.

Troy, Wis.—On Election Day bonds amounting to \$12,000 for good roads will be voted upon.

Wauwatosa, Wis.—City is considering types of pavements for several streets. Also is receiving bids on extending water mains.

Niagara Falls, Ont.—The city council has decided to macadamize Barker St. and Morrison St., between Buckley and Victoria Aves.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Berkeley, Cal.—*Hutchinson Co., for curbing, macadamizing and improving streets.

San Diego, Cal.—*E. A. McAlpin, local, at \$24,470, for constructing concrete pavement.

Santa Barbara, Cal.—*A. L. Pendola, local, at \$11,603, for constructing asphalt pavement.

Stockton, Cal.—*Paul & Caldwell, at \$13,825, for paving several streets.

Beneon Falls, Conn.—*John Arborio, 36 Ward St., New Haven, at \$8,000, for 1 1/4 miles gravel roads.

Georgetown, Del.—E. C. Humphrey, Hackensack, N. J., low bidder on 10 miles of Coleman du Pont concrete road.

Jacksonville, Fla.—*W. F. Purdon, for 2,500 cu. yds. of street at 60 cts. a yard.

St. Augustine, Fla.—*Gleissson & Hancock, at \$23,500, for 11 miles of brick roads 10 ft. wide; Logan Concrete & Engineering Co. bid \$23,644.24.

East St. Louis, Ill.—Bids received for improvement of 23d St., which is to be reinforced concrete, were as follows: Maule & McCabe, \$28,708; Houfken Supply & Construction Co., Belleville, \$30,635; Dunlap-Dippold Co., Edwardsville, \$30,551; Louis Rich, \$31,338; Keeley Bros., \$30,908; Meyer-Thomas Construction Co., \$31,995.

Elgin, Ill.—*Illinois Hydraulic Stone & Construction Co., local, for 3,937 sq. yds. concrete pavement at \$1.76, and 2,441 ft. integral curb at 30 cts., total bid \$7,686.42. Logan & Gierzt Constr. Co., local, bid \$7,818.90. *McCarthy Improvement Co., Davenport, Ia., for 15,650 sq. yds. asphaltic concrete on old macadam at \$1, and 670 yds. brick pavement at \$2, total bid \$16,983.30. The John McGarry Co., of Chicago, bid \$18,175. *Illinois Hyd. Stone & Constr. Co., local, for 2,726 sq. yds. concrete pavement at \$1.75 and 2,033 ft. curb at 30 cts., total bid \$5,469.18. Logan & Gierzt Constr. Co., bid \$5,523.70. *Illinois Hyd. Stone & Constr. Co., for 1,230 sq. yds. hillside brick pavement at \$2.10, and 620 ft. concrete curb at 40 cts., total bid \$2,947.20. Logan & Gierzt Constr. Co., bid \$3,011.20.

Granite City, Ill.—*Hoeffken Bros., Belleville, at \$28,664.24 for paving E. St.

Rock Island, Ill.—*McCarthy Improvement Co., at \$18,991, for asphalt paving.

Springfield, Ill.—Contracts have been awarded by State Highway Department as follows: Warren County, concrete, *E. A. Lord Const. Co., Monmouth, Ill., \$9,233.06; Douglas County, brick, *Goggin Const. Co., Arcola, Ill., \$11,065.44; Edwards County, brick, *J. C. Carlyle, Albion, Ill., \$2,616.10; Macon County, oiled earth, *Ben F. Harrison, Decatur, Ill., \$23,446.28; Union County, earth, *E. W. & R. E. Howenstein, Anna, Ill., \$2,430.56; Union County, earth, *E. W. & R. E. Howenstein, Anna, Ill., \$2,387.43.

Fowler, Ind.—*Albert Gray, at \$12,900, for constructing gravel road.

Fort Wayne, Ind.—*A. H. Fry, local, road construction, \$16,849; *Rider-Webster, local, at \$9,538.

Fort Wayne, Ind.—*C. E. Moellerin Construction Co., for paving alleys.

Greensburg, Ind.—Following bids received on macadam road: Thompson & Davis, local, \$6,677; C. E. Redington, local, \$6,750.

Indianapolis, Ind.—Following street contracts have been awarded by Board of Public Works: Yandes St., east side, from 24th to 25th, cement walks, to *Chas. Schwert; Olney St., from Pratt to 10th, concrete curb, to *Henry Parker; 23d St., from Eldridge to Schurmann, gravel roadway and curb to *Lawson & Bruce; 23d St., from Eldridge to alley east of Belt R. R., cement walks, to *Chas. Schwert.

Indianapolis, Ind.—*C. J. Schwert for graveling, grading and cement curb and walk; *Henry Rothast, curbing.

Indianapolis, Ind.—*Standard Oil Co., at \$16.90 per ton for 50 tons asphalt. Great Western Oil Co., Pioneer Asphalt Co., A. F. Zealring and W. F. Moore were other bidders.

Indianapolis, Ind.—The board of public works let the following contracts Sept. 15: Broadway from 48th to 49th, bituminous concrete, to Republic Constr. Co.; Park Ave., from 48th to 49th, bituminous concrete, to Indiana Asphalt Paving Co.; 39th St., from Broadway to College, asphalt, to Republic Constr. Co.; Tacoma Ave., from 17th to Brookside, asphalt roadway, to Indiana Asphalt Paving Co.; Meridian St., from 982 ft. north of 46th to 50th, asphalt and curb, to Indiana Asphalt Paving Co.; 25th St., from Bellefontaine to Yandes, asphalt, to Indiana Asphalt Paving Co.

Mt. Vernon, Ind.—*Lawrence Thomas, local, for one mile of gravel road, at \$3,868.

South Bend, Ind.—*Hugh Anderson, at \$1,986.10 for grading and constructing curb and walk.

Davenport, Ia.—Contract for paving several streets awarded to Little Construction Co., local.

Dubuque, Ia.—C. B. McNamara & Co., local, for constructing 25,000 sq. yds. brick pavement.

Oswayo, Ia.—Ed. Quackenbush for constructing permanent county road.

Sioux City, Ia.—Bids received on 6,400 sq. yds. concrete paving Sept. 9 as follows: Owens & Co., local, \$1.20 per sq. yd.; total bids, \$7,680. W. B. Carter, local, \$1.27; Hansen & Son, local, \$1.34; Hanlon & Okis, \$1.28.

Waterloo, Ia.—G. W. Condon, for graveling five miles of road.

John, Kan.—County commissioners have awarded to Kaw Paving Co., Topeka, at \$29,000, contract for 6½ miles of road.

Louisville, Ky.—Louisville Asphalt Co., at \$6,850, for reconstructing Second St.

Louisville, Ky.—Contract awarded to K. A. Barker, local, at \$37,000 for concrete paving, and J. A. Cahill, local, for brick paving, \$12,300.

Newport, Ky.—Metzel & O'Hearn, Covington, for paving streets, at \$11,536.

New Orleans, La.—State Highway Department has awarded contract for Monroe-Winnboro road to Wetzel & Co., Alexandria, at \$109,634.

New Orleans, La.—Following bids received Sept. 12 on sanitary drains and paving 7 streets with bitulithic, bit. con., oil manufactured asphalt, Trinidad pitch asphalt, creosoted wood block, small granite block and brick. Contracts will not be awarded nor pavement decided on for 60 days. W. J. Hardee, city engineer. Barracks St., from N. Rampart St. to N. Peters St. (7 blocks): Mike Mitchell, \$7,711.84; J. H. Coats Co., \$7,815.10; Grasser Contracting Co., \$7,854.55; Blum & McNamara, \$7,924.90; Craven & Lang, \$8,040.35; W. J. Comerford, \$8,473.66; T. O. Hotard, \$8,782.85; Hampton Reynolds, \$9,353.75. N. Peters St., from Esplanade Ave. to Ursulines St. (3 blocks): Craven & Lang, \$3,804.30; Blum & McNamara, \$3,962.80; J. H. Coats & Co., \$4,008.20; Grasser Contracting Co., \$4,108.35; Hampton Reynolds, \$4,141.35; W. J. Comerford, \$4,324.75. Ursulines St. from N. Peters to Rampart Sts. (7 blocks): Blum & McNamara, \$7,162.20; Mike Mitchell, \$7,210.76; Craven & Lang, \$7,272.60; J. H. Coats Co., \$7,393.80; Grasser Contracting Co., \$7,634.20; W. J. Comerford, \$7,888.14; Hampton Reynolds, \$8,631.80. Royal St. from Toulouse St. to Esplanade Ave. (9 blocks): Blum & McNamara, \$10,770.80; J. H. Coats Co., \$11,543.40; Craven & Lang, \$11,775.90; W. J. Comerford, \$12,432.62; Grasser Contracting Co., \$13,411.50; Hampton Reynolds, \$13,522.10. Bourbon St. from Toulouse St. to Esplanade Ave. (9 blocks): J. H. Coats Co., \$11,552.40; Blum & McNamara, \$11,589.10; Craven & Lang, \$11,954.50; Mike Mitchell, \$12,489; W. J. Comerford, \$12,709.90; Grasser Contracting Co., \$13,502; Hampton Reynolds, \$13,751.50. Esplanade Ave. from N. Rampart to N. Peters Sts. (7 blocks): Craven & Lang, \$12,840.20; Blum & McNamara, \$13,087.80; Grasser Contracting Co., \$13,159.12; J. H. Coats Co., \$13,277; T. O. Hotard, \$13,447.92; W. J. Comerford, \$13,966.26; Hale & Stiehl, \$14,724.80; Hampton Reynolds, \$15,863.60. St. Ann St. from Claiborne Ave. to Decatur St. (12 blocks): Blum & McNamara, \$22,154.62; J. H. Coats Co., \$22,339.15; Mike Mitchell, \$22,243.85; Grasser Contracting Co., \$22,317.15; Bancroft & Ross, \$22,709.75; Craven & Lang, \$23,483.50; Hale & Stiehl, \$25,131; W. J. Comerford, \$25,456.30; Hampton Reynolds, \$26,215.

Portland, Me.—Bids for laying 3,200 sq. yds. split granite block on concrete, opened Aug. 21, as follows: Mahoney Const. Co., Portland, \$1.95 per sq. yd., total \$6,240; D. F. Griffin & Bro., Portland, \$2.28 per sq. yd., total \$7,296; Hassam Paving Co., Worcester, Mass., \$2.25 per sq. yd., total \$7,200.

Baltimore, Md.—W. B. Shaffer Co., 303 Fifth Ave., New York, at \$25,775 for 2.10 miles paving in Kent Co.

Frederick, Md.—On 1.52 miles state-aid road, H. W. Kaylor, Hagerstown, at \$14,719.45, was low bidder.

Richmond, Md.—W. R. Payne, for constructing cement roadway; price, \$1.21 per sq. yd. for pavement; \$1 per ft. for 15-in. sewer; manhole, \$25.

Rockville, Md.—George B. Mulligan Co., 14th and Kennedy Sts., Washington, D. C., at \$50,000, for grading and constructing bituminous macadam road.

Boston, Mass.—Bids were opened upon the 11th instant for asphalt, Topeka or bitulithic paving on the following streets: Atkins St., Gaffney St., Cummings road, Fordham road, Glencoe St., Matchett St., William Jackson Ave., Blake St., Rugby road, Westwood St.,

Neptune road, Wordsworth St., Bexley road, Kenton road, Lorne St., Perham St., Richmond St., Saville St. and Selwyn St. The lowest bid received was \$179,242.05. This bid represents \$1.98 per sq. yd. for sheet asphalt on a 4-in. concrete base, submitted by the D. M. Biggs Co. On August 25 the lowest bid received on this particular work was \$2.12 per sq. yd., but on July 19 for about one-half of the quantity a bid of \$1.60 per sq. yd. was received and accepted. All bids will be rejected and work will be readvertised.

Boston, Mass.—Martino de Mattes, Roslindale, at \$4,916, for street work. *B. E. Savage, Worcester, at \$8,829.25, for street work.

Boston, Mass.—State Highway Dept. awarded contract to *C. E. Horne, Millbury, at \$15,745, for 3 miles gravel road.

Boston, Mass.—Contract for paving several streets awarded to B. E. Grant, 99 W. Cedar St., at \$362,000.

Hamilton, Mass.—C. E. Whipple at \$6,463 for constructing state highway.

Millford, Mass.—Bids on street work received as follows: Snow & Farrington, of Wrentham, on the Purchase St. contract; Vincenzo Calabrese, of Millford, on all streets; also Cenedella & Co., of Millford; Charles E. Horne, of Millbury; P. Berrini, of Ashland, and the Independence Cold Tar Co., of Boston on all streets.

New Bedford, Mass.—Bids received as follows for 395,000 wood paving blocks: *Rodd Co., Pittsburgh, Pa., at \$32.50 per M for lug wood blocks, bid same on rectangular blocks; Jennison-Wright Co., \$32.82 for rectangular and \$33.94 for lug; George M. Stevens, \$33 for rectangular; Green & Wood, \$33.60 for rectangular; J. Edw. McLean, \$37.50 for rectangular blocks.

Uxbridge, Mass.—Luchini-Mazani Co., Milford, low bidders at \$12,617 on state highway work.

Menominee, Mich.—Andrew Carlson, for paving with concrete and curbing on Stephenson Ave.

Duluth, Minn.—*John Johnson, at \$19,649, for paving with sandstone; *D. H. Clough & Co., at \$5,960, for improving McCuen St. extension. All bids for paving on Minnesota Ave. are being held and may be rejected.

Ellensburg, Minn.—*Angelo Salvi, Chisholm, Minn., for road construction.

Columbus, Miss.—Contract let to J. L. Wells at \$17,600 for county road work.

Franks Point, Miss.—*F. A. Gano, Jackson, at \$95,000, for constructing 76 miles gravel road, grading 40,000 cu. yds., etc.

Gulfport, Miss.—*J. B. McCrary Co., Atlanta, Ga., for street paving at \$35,000.

Hazlehurst, Miss.—*McTighe & Hughey, local, at \$340,000, for constructing gravel roads. *H. C. Wheeler, at \$30,000, for concrete work.

Holly Springs, Miss.—Bids received for road improvement including 265,000 cu. yds. earth grading, on 53 miles of roads, 30 miles graveling and 23 miles sand-clay surfacing from *McTighe-Hughey Co., Hazlehurst, Miss., \$138,000; Worthington Construction Co., Birmingham, Ala., \$142,200; Boyd & Bradshaw, Columbia, Miss., \$152,000.

Kosciusko, Miss.—*C. C. Scarcey & Co., Columbus, Miss., for constructing 8 miles of gravel roads; *F. D. Harvey & Co., Starkville, Miss., for 17½ miles sand-clay road.

Hannibal, Mo.—*Wilson & Yoeman, for constructing concrete curbs and gutters.

Liberty, Mo.—*J. F. Carr, local, for paving and constructing curbs and gutters.

Billings, Mont.—*Warren Construction Co. at \$51,564 for paving with gravel bitulithic.

Atlantic City, N. J.—Following are low bidders on 83,400 sq. yds. pavement: Warner-Quinlan Asphalt Co., Syracuse, N. Y., low bidder on asphalt at \$1.85 for paving and 15 cts. per sq. yd. excavation, total bid \$193,509.55; Edw. L. Bader, local, low bidder on Warrenite, at \$2.31 and 15 cts., total bid \$226,990; Northern Construction Co., Newark, N. J., low bidder on brick at \$2.69 and 18 cts., total bid \$289,037.85.

Montclair, N. J.—*Continental Construction Co., local, at \$1.05 per sq. yd. for Topeka pavement on Orange Rd.; *Michael Tusco, local, at \$1.00 per sq. yd. for pavement on Laurel Pl.

New Brunswick, N. J.—Following bids received on 54,000 sq. yds. pavements: F. H. Ridder local, \$2.67 for warrenite, \$2.75 for brick and \$2.95 for asphalt block; Utility Construction Co., local,

\$2.69 warrenite, \$2.81 brick, \$3.90 asphalt block; A. John, local, \$2.80 warrenite; \$2.85 asphalt block.

Plainfield, N. J.—*Hickey & Hughlin, Somerville, at \$26,436, for 34,000 sq. yds. Tarvia macadam.

Rutherford, N. J.—*A. Borghi, Woodridge, at \$9,053, for street improvement.

Westfield, N. J.—Four bids have been received for the improvement of the East Broad St. and Mountain Ave. parks. The bids were as follows: G. W. Lawrence Co., Newark, \$20,506; J. F. Shanley Co., Newark, \$21,583; George Scott, Irvington, \$28,194, and John W. Heller, South Orange, \$28,672.

Albany, N. Y.—Sealed proposals were received by the State Highway Commission on Monday, Sept. 18, 1916, for the improvement of state aid of the following highways (three low bidders are given): Road No. 1,449, Maine-Glen Aubrey, Broome Co., 5.35 miles; No proposals received. Road No. 1,450, Castle Creek-Whitney Point, Broome Co., 6.93 miles; No proposal received. Road No. 5,623, Oxford-Soldiers' Home, Chenango Co., 1.30 mile; A. B. Haight, Oxford, N. Y., \$21,329.40; Paddleford & King, Sherburne, N. Y., \$22,180.15; H. S. Schauf, Guilderland, N. Y., \$22,360.15. Road No. 763, Hollowville-Craryville, Columbia Co., 7.14 miles (completion contract); No proposals received. Road No. 1,439, Sidney-Masonville, Delaware Co., 6.51 miles; Hovey E. Benedict, Williamsport, Pa., \$89,961; Edward B. Abrogast, Stroudsburg, Pa., \$90,504. Road No. 1,445, East Aurora-Lancaster, Pt. 2, Erie Co., 3.54 miles; Mosier & Summers, Inc., Buffalo, N. Y., \$59,998. Road No. 1,446, South Newstead-Peters Cors., Erie Co., 0.91 mile; No proposals received. Road No. 5,622, Holland-Yorkshire, Pt. 1, Erie Co., 5.19 miles; No proposals received. Road No. 1,459, Wayland-Dansville, Pt. 2, Livingston Co., 1.47 mile; Bradley & McGreevey, Elmira, N. Y., \$19,595.21; Kennedy Const. Co., Albany, N. Y., \$19,999; Atlanta Const. Co., Atlanta, N. Y., \$20,005. Road No. 573-A, Sea Breeze-Nine Mile Point, Monroe Co., 0.11 mile; C. W. Reynolds, New York City, \$1,830. Road No. 513, Amsterdam-Morris Corner, Montgomery Co., 2.49 miles; No proposals received. Road No. 514, Snooks Corners-Amsterdam, Montgomery Co., 2.70 miles; No proposals received. Road No. 515, Berryville-Sammonsville, Montgomery Co., 1.61 mile; No proposals received. Road No. 517, Palatine Bridge-Stone Arabia, Montgomery Co., 3.70 miles; No proposals received. Road No. 1,396, Sheridan Boulevard-Burnside Ave. and Rockaway Lake, Nassau Co., 2.99 miles; Rosenthal Eng. & Contg. Co., Inc., Brooklyn, N. Y., \$118,052.75. Road No. 5,590, Lewistown Heights-Lewistown, Niagara Co., 0.61 miles; No proposals received. Road No. 5,624, Richfield Springs Village-Church, Prospect and Bronner Sts., Otsego County, 1.05 mile; Union Paving Co., Schenectady, N. Y., \$26,537.40; Federal Pavement Corp., New York City, \$26,876; Harry W. Roberts Co., Inc., Utica, N. Y., \$26,954. Road No. 1,455, Brewster Connecticut State Line, Putnam Co., 3.42 miles; John R. Arborio, New Haven, Conn., \$42,880.50; John A. Jova, Inc., Newburgh, N. Y., \$43,499.76. Road No. 1,423, Speightstown-Tomahanick Reservoir, Rensselaer Co., 6.34 miles; The Belmar Const. Co., Troy, N. Y., \$84,591.75. Road No. 5,519, Malta-Ballston Spa, Saratoga Co., 3.73 miles (completion contract); F. D. Van Horn, New York City, \$22,096.62; John B. Dower, Ballston Spa, N. Y., \$23,366.55. Road No. 5,545, Schenectady-Duanesburg, Pt. 2, Schenectady Co., 5.62 miles (completion contract); Green & Miller, Schenectady, N. Y., \$49,600.15; Lane Const. Corp., Meriden, Conn., \$51,149.40. Road No. 1,401, Willard-Ovid, Seneca Co., 2.13 miles; Hovey E. Benedict, Williamsport, Pa., \$22,186.45. Road No. 1,308, Hawthorne-Pleasantville, Westchester Co., 2.15 miles (completion contract); John A. Jova, Inc., Newburgh, N. Y., \$22,516.62; Jas. V. Troisi, Mt. Vernon, N. Y., \$28,545.65. Road No. 1,456, Westchester Ave.-Westchester Co., 1.09 mile; Daly & Merritt, Portchester, N. Y., \$44,153. Road No. 1,457, Lake St., Ridge St., and Harrison Ave., Westchester Co., 4.62 miles; Smith Bros. Contg. Co., Pelham, N. Y., \$66,380; Rosenthal Eng. & Contg. Co., Brooklyn, N. Y., \$69,828; Lewis Pettillo, Mt. Vernon, N. Y., \$75,056. Proposals were also received Monday, Sept. 18, 1916, for the repair of the following highways: Rep. Con. No. 1,001, Broome Co., Road No. 126, 0.48 mile; Sherman Contracting Co., Inc., Oneonta, N. Y., \$15,237; Frank Stento, Binghamton, N. Y., \$15,354.60; Tyne & Willey, Bingham-

ton, N. Y., \$15,587.50. Rep. Con. No. 999, Onondaga Co., Road No. 1,039, 2.61 miles: John H. Weidman, Syracuse, N. Y., \$11,555.25; McGreevey, McGuigan & Baum Const. Co., Elmira, N. Y., \$11,583.10; Rock & Griffin, Watertown, N. Y., \$12,143.25. Rep. Con. No. 1,095, Albany Co., Roads 1,220, 365, 5,501, 367, 198, 366, 178, 192, 177: Thos. J. Martin, Beacon, N. Y., \$11,710.30; Defiance Corporation, Ticonderoga, N. Y., \$12,084.30; Edward Hartney, Modena, N. Y., \$12,220.30.

Albion, N. Y.—F. H. Rhodney, local, at \$90,000 for street improvement. *Hembt & Washington, Monticello, for street improvement at \$9,600.

Niagara Falls, N. Y.—Following bids received for paving: McKinney-McGuire Contracting Co., brick pavement, \$5,305.75; concrete pavement, \$3,710.75; Read-Coddington Engineering Co., \$3,628.60 on concrete.

Seneca Falls, N. Y.—*Smith, Soper & Son for curbing and paving with brick.

Watertown, N. Y.—*Charles J. Haley, local, at \$3,101.48, for constructing curb and gutter.

Southport, N. C.—*D. A. Bennett, local, for constructing 10 miles county road.

Bismarck, N. D.—*Hanson & Oles, at \$115,520.56 for paving with bitulithic; *Ford Paving Co., at \$331,568.01 for sheet asphalt pavement (Trinidad).

Bowbells, N. D.—Contract awarded to *John Hogen, Coteau, for road improvement work.

Cleveland, O.—Following street improvement contracts awarded: *Cleveland Trinidad Paving Co., \$3,571 and \$9,209.

Defiance, O.—*R. C. Roach, at \$64,070, for improving 8 miles on the Ottawa Pike.

Findlay, O.—*J. H. Hall, at \$14,500, for street resurfacing.

Fremont, O.—*Pearson & Welch Co., local, at \$22,750, for grading and macadamizing road.

Gardenhutton, O.—*W. M. Grode & Co., Newcomerstown, at \$15,500, for brick paving and concrete curb.

Ironton, O.—*Mahl Bros., local, at \$29,000, for constructing brick road.

London, O.—For asphalt paving, *Andrews Asphalt Paving Co., Hamilton, at \$22,600.

Norwood, O.—*George Murdock, local, at \$30,000 for wood block paving; *John Snyder at \$2,000 for macadam.

Oxford, O.—*Brooks Construction Co., Fort Wayne, Ind., at \$33,000, for street paving.

Portsmouth, O.—*S. Monroe & Son, at \$4,500, for constructing brick pavement and cement curb.

Sandusky, O.—Following bids have been received on paving: 5th St., A. G. O'Donnell, \$2,509.90, concrete; Maple Ave., C. E. Williams, Grand Rapids, Mich., \$6,380, brick; \$6,364.80, asphalt; A. G. O'Donnell, \$5,655.50, concrete; Townsend St., C. E. Williams, \$2,614.32, brick; \$2,433.70, asphalt; A. G. O'Donnell, \$2,210.50, concrete; Campbell St., A. G. O'Donnell, \$11,653, brick; C. E. Williams, \$14,370, asphalt; McKinley St., C. E. Williams, \$8,881, brick; \$8,180.50, asphalt; A. G. O'Donnell, \$6,322, concrete; \$8,098, brick. Low bids will be given the commission under recommendation that they be accepted and the contracts authorized.

Springfield, O.—Bids opened recently on street paving show W. F. Payne low on Texaco asphaltic concrete; M. J. Hanon low on Trinidad; Cleveland Trinidad Co. low on sheet asphalt, and M. J. Hanon low on asphalt block. Contract totals about \$24,000.

Xenia, O.—*Andrews Asphalt Paving Co., Hamilton, at \$63,408, for concrete pavement and 3,500 ft. 15-in. sewer.

Washington, C. H., O.—For brick and macadam paving, *Wilt, Bolln & Kelly, local, at \$8,000, and *T. S. Knight, 487 Oak St., Columbus, at \$7,000.

Cottage Grove, Ore.—*Beidler Bros. for improving Second St.

Edwardsville, Pa.—J. Banks Constr. Co., Wilkes-Barre, Pa., has been awarded contract at \$120,000 for paving.

Hughesville, Pa.—For paving 5,000 sq. yds. with tarvia, B. H. Corvett, Williamport, Pa., at 97 cts. a yd.

Norristown, Pa.—For 4½ miles macadam resurfacing, contract let to Ambler-Davis Co., Harrison Bldg., Philadelphia.

Uniontown, Pa.—*Reagan, Lynch & Co. for brick paving and concrete curb on 1½ miles streets.

West View, Pa.—For grading, curbing and paving, to *Austin & Matthews, Connelville, Pa., at \$24,254.

Mitchell, S. D.—*C. H. Atkinson, Watertown, for grading and constructing

pavement, curbs and gutter on several streets.

Jackson, Tenn.—*T. L. Heliard, local, for 32,500 sq. ft. concrete walks at 11 cts. per sq. ft.

Nashville, Tenn.—Contract for concrete curbs and sidewalks awarded to *Adamant Stone & Roofing Co., at 22 cts. per lin. ft. for curbs and 12 cts. per sq. ft. for walks.

Waxahachie, Tex.—*Taylor, Walker & Bell, Dallas, for one mile of paving at \$40,000.

Brigham, Utah.—*H. G. Gikerson, Salt Lake City, at \$25,000, for constructing concrete road.

Gate City, Va.—For constructing 7½ miles macadam road, *Mitchell & Cochran Co., Chatham.

Brattleboro, Vt.—*Pellett & Skinner, for laying concrete sidewalks (about \$1,400).

Norfolk, Va.—*John Baker, Jr., New York City, for furnishing 60 tons asphaltic cement.

Suffolk, Va.—*Heck & Clark, local, at \$8,000 for constructing curb and gutter.

Seattle, Wash.—*N. P. Zindorf, local, at \$25,000, for grading and graveling park highway.

Baldwin, Wis.—Contract awarded to R. Johnson for constructing two blocks of concrete pavement.

Eau Claire, Wis.—*Hans Halverson, 616 N. Dewey St., for constructing combined concrete curb and gutter.

Green Bay, Wis.—*N. P. Caughlin Co., Milwaukee, for paving with asphalt.

Milwaukee, Wis.—*Dean Construction Co., local, at \$10,448, for paving alleys; *George Czerwinski, local, at \$10,000, for paving with granite block; *Milwaukee General Construction Co., at \$11,602.

Sheboygan, Wis.—Following bids opened Sept. 6: Paving North 14th St., *Lisstein & Naumann, \$11,933; John Braun Const. Co., \$12,212.20. For paving Calumet Rd., Christ Johnson, Oshkosh, \$13,455.60; John Braun Constr. Co., \$13,857.20. Calumet Ave. extension, Christ Johnson, Oshkosh, \$15,886.40; John Braun Constr. Co., \$16,258.30.

Wausau, Wis.—*Carl Lotz, local, for brick pavement on Scott St.

Weyauwega, Wis.—*August Kramp, Berlin, for concrete paving at \$1.40 per yd., total bid about \$5,000.

Casper, Wyo.—*Warren Construction Co., Billings, for bitulithic paving, at \$40,000.

Ottawa, Ont.—*Ottawa Constr. Co., at \$115,500, for asphalt pavement construction; O'Leary's, Limited, Bank St., Chambers, at \$30,913.

SEWERAGE

Los Angeles, Cal.—City will construct 30-in. brick or concrete sanitary sewer.

Stamford, Conn.—City is planning to construct 6,000 ft. of storm water sewer by day labor. Paul Nash, City Engineer, estimates cost at \$15,000.

Waterbury, Conn.—Council received petition for sewer construction in Butler St.

Batavia, Ill.—Bids will be asked for the construction of sewer system. Address city clerk.

Shelbyville, Ind.—The construction of a storm sewer is contemplated.

Alton, Ia.—City contemplates new sewer system to cost about \$18,000.

East Dubuque, Ia.—The installation of a sanitary sewer is under consideration. It will cost approximately \$10,000.

Independence, Kan.—An ordinance has been passed providing for a lateral sewer.

Wichita, Kan.—It has been declared necessary to construct sub sewer district No. 12.

Haverhill, Mass.—A surface drainage system to take away surface water to cost \$15,000 will be recommended to the city council by City Engineer L. C. Lawton.

Reading, Mass.—Plans are being prepared for sewer system or ordinary lateral sewers and interceptors.

Grand Rapids, Mich.—City has tentatively decided on site for sewage disposal plant.

Sault Ste. Marie, Mich.—It has been resolved that the board of public works be instructed to provide the necessary drainage to drain Pine St. between Spruce St. and Peck St., also to have the ditches cleaned in the vicinity of the Fourth Ward school.

Sault Ste. Marie, Mich.—It has been recommended that the board of public works be authorized and instructed to lower the sewer to a sufficient depth from Douglas St. to west end of present paving.

Dawson, Minn.—Sealed bids will be received until 8 o'clock p. m., Sept. 16, for the purchase of sewer bonds amounting to \$25,000. J. C. Hanson, city clerk.

Duluth, Minn.—All bids on sewer construction on Fifth St. have been rejected.

Duluth, Minn.—Sanitary sewers have been ordered in several streets.

Morris, Minn.—Bids received on drainage ditch work rejected, and new bids will be received soon.

Windom, Minn.—City votes Sept. 27 on \$15,000 bond issue for constructing sewers.

Marks, Miss.—See "Water Supply."

Dover, N. J.—New plans will be prepared for the disposal plant at the eastern limits of Dover in Rockaway Twp.

Montclair, N. J.—Ordinance has been passed calling for installation of house connections on five streets.

Newton, N. J.—See "Streets & Roads."

Union, N. J.—Township Commissioners have passed ordinance for sewer system.

Batavia, N. Y.—Contractor has abandoned work on E. Main St. sewer and city will finish it.

Buffalo, N. Y.—City contemplates \$42,000 bond issue for trunk sewers in Albany St.

Green Island, N. Y.—City has rejected all bids for sewer construction.

Niagara Falls, N. Y.—City Council has approved the laying of sewers at a cost of \$28,000.

Rochester, N. Y.—See "Streets and Roads."

Rochester, N. Y.—A new sewer in Clay Ave. is contemplated.

Cincinnati, O.—See "Streets & Roads."

Springfield, O.—Sealed proposals will be received until 12 o'clock noon, Sept. 25, for the purchase of sewer bonds amounting to \$7,812.60.

Commerce, Okla.—City contemplates bonds for construction of sanitary sewers at a cost of \$30,000.

Kusa, Okla.—\$25,000 bonds have been voted and sold for a modern storm sewer system.

Eugene, Ore.—Ordinances for two sewers have been prepared. The sewers are as follows: On Cheshire Ave., from the alley between Lawrence and Washington Sts. to Jefferson St.; in the alley between Jefferson and Washington Sts., from Fourteenth Ave. to the manhole on Washington St., a distance of 650 ft.

Cantavissa, Pa.—Borough Engineer has been authorized to draw plans for the construction of a sewage disposal plant. Sewer Committee has been authorized to purchase the pipe for sewers on several streets.

Ellwood, Pa.—City will soon start preliminary work on sewage disposal plant.

Williamsport, Pa.—See "Streets and Roads."

Williamsport, Pa.—Sealed proposals will be received until 10 o'clock a. m., Sept. 25, for the purchase of bonds amounting to \$60,000 for the construction of storm sewers.

Bryan, Tex.—An election will be held the second Tuesday in November to vote on bond issue amounting to \$10,000 for a sewage disposal plant.

Clisco, Tex.—City will extend sewerage system and construct disposal plant.

Houston, Tex.—Plans for a 36-in. sanitary sewer from First and Girard to the North Side sewage pumping plant have been approved.

Houston, Tex.—Surveys are to be made by the engineering department and the probable cost figured for sanitary and storm sewers.

Houston, Tex.—Bonds amounting to \$600,000 will be issued for construction of sewers and sewage disposal plants.

Houston, Tex.—Bond issue of \$100,000 has been approved.

San Antonio, Tex.—Plans and specifications have been prepared for the construction of more than 3 miles of sanitary sewers, and bids are to be called for. Address City Engineer Helland.

Ogden, Utah.—Construction of a storm sewer in Madison Ave. from 27th St. to Ogden river has been authorized; cost about \$25,000.

Wellsburg, W. Va.—City has voted \$85,000 bonds for sewer system.

Appleton, Wis.—City Engineer has been instructed to prepare plans for a new sewer on Spring St.